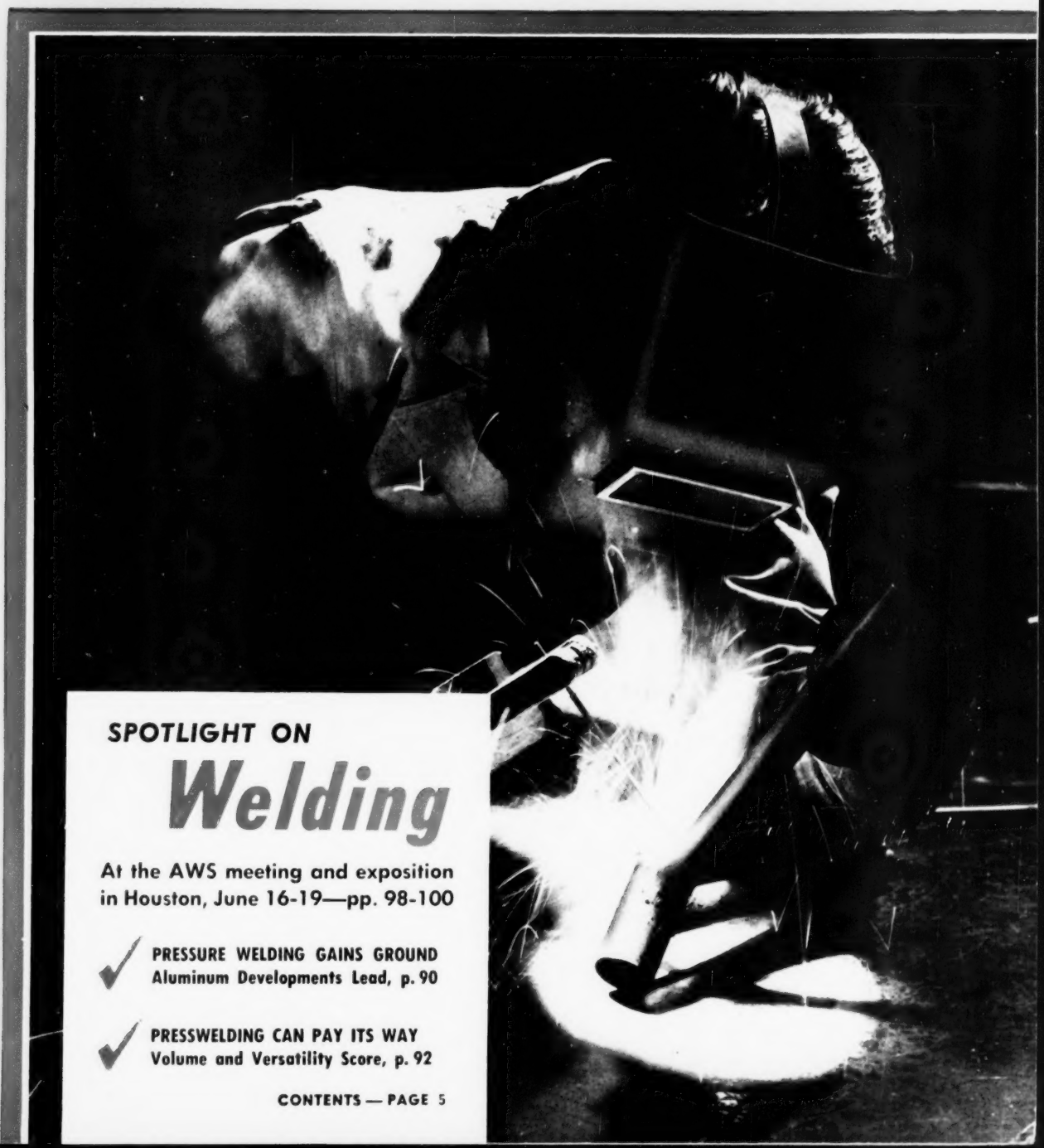
JUNE 8, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



SPOTLIGHT ON Welding

At the AWS meeting and exposition in Houston, June 16-19—pp. 98-100

✓ PRESSURE WELDING GAINS GROUND
Aluminum Developments Lead, p. 90

✓ PRESSWELDING CAN PAY ITS WAY
Volume and Versatility Score, p. 92

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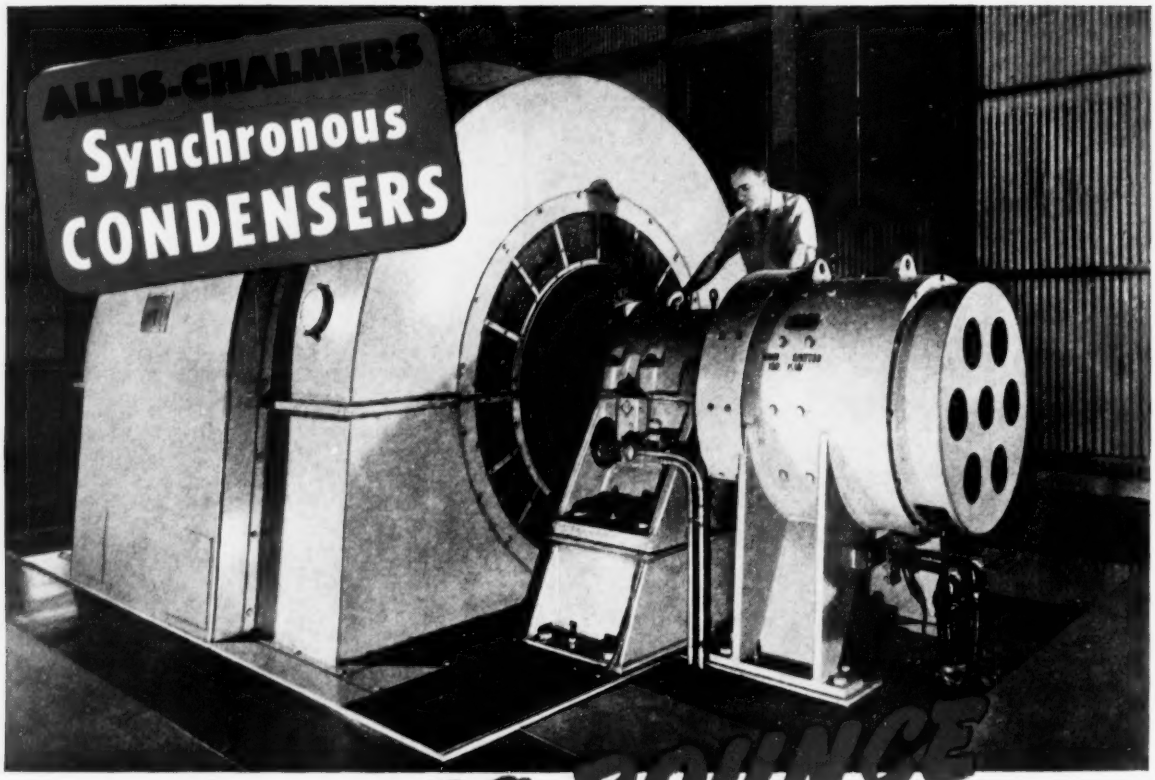


FOR LESS BOUNCE TO THE ARC

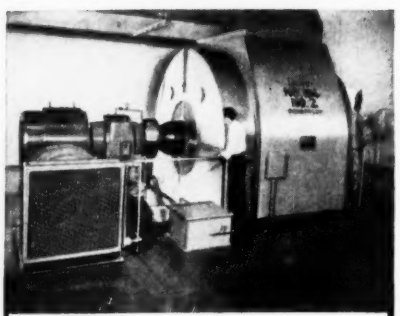
this low reactance condenser insulates power system from violent arc furnace load swings

RECENTLY INSTALLED in a southern steel plant, this 25,000-kva synchronous condenser was designed to solve a serious power supply problem. In adding a large arc furnace, the plant engineers had to keep the voltage disturbances from bouncing back into the local power system.

Short of producing their own power, they had a choice of three ways of doing this. They chose a synchronous condenser because it could do the job more economically and more reliably than a motor-generator set and could handle the violent kva fluctuations better than series capacitors.

With the condenser and furnace in parallel, a buffer reactor on the line insures adequate absorption of the arcing transients by the condenser. And pilot excitation from a *Regulex* control provides high speed response to the reactive kva swings of the furnace.

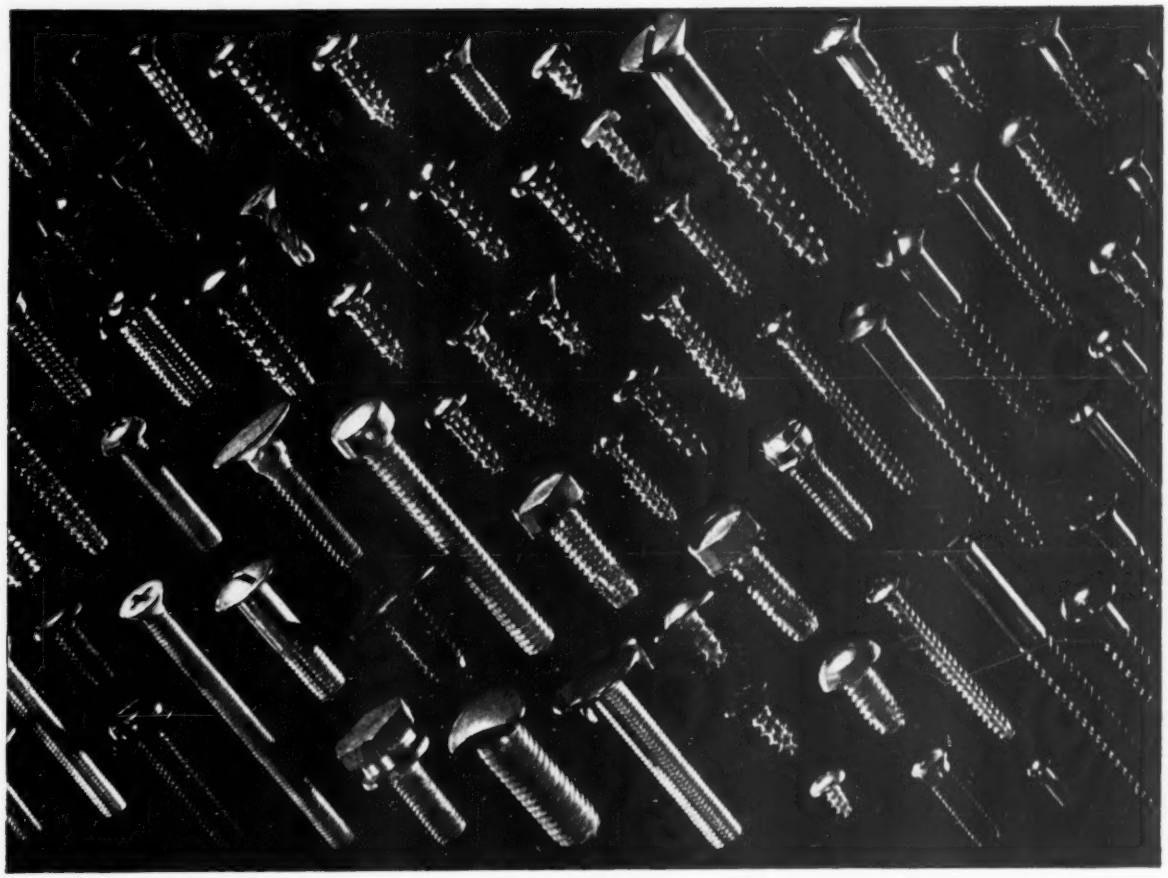
If you need a special condenser or one for power factor correction, Allis-Chalmers can supply a unit engineered to your requirements. For construction features, ratings and standards, ask your A-C representative for Bulletin 05B7285. Or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3853



One of two units installed for power factor correction in a large Ohio steel plant, this 20,000-kva synchronous condenser paid for itself within a short period of time.

Regulex is an Allis-Chalmers trademark.

ALLIS-CHALMERS



Each Made From the Right Cold-Heading Wire

If you're cold-heading fasteners, you know how important it is to start with the right wire. With the right wire, you can produce the fastener economically, and at the same time make an item that will do its job right.

Bethlehem can help you improve your production of cold-headed fasteners by supplying wire with the required properties. Perhaps the wire you need must have good machinability. Or perhaps it must be of the right composition to respond to heat-treatment properly. Or be able to withstand severe cold-heading operations.

And of course all fasteners call for wire that is sound, uniform in analysis, and free from injurious surface defects. But whatever your requirements—for fasteners, or any other application—you can be sure that we can supply you with the wire that will help make your product better.

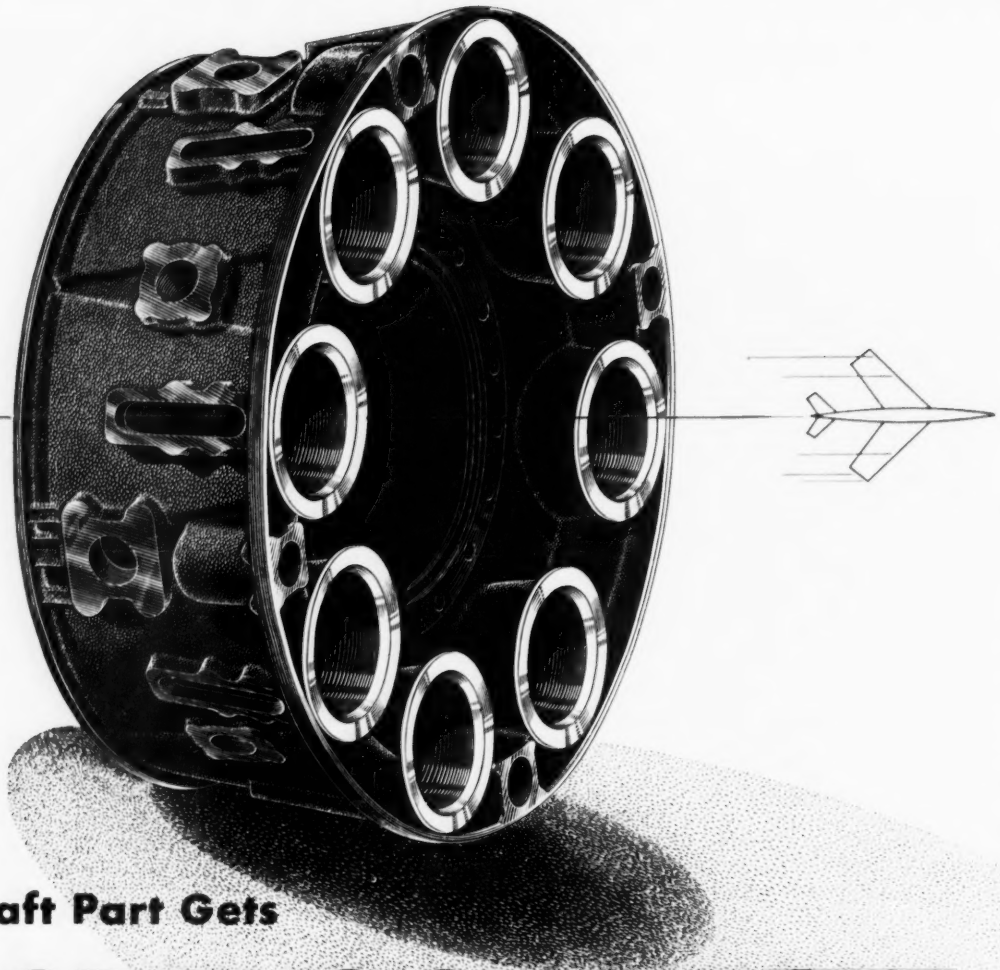
Bethlehem makes just about every kind of steel wire. Some are general-purpose grades; others, like screw wires, are tailor-made for a single application. If you make screws, or any other item by cold-heading, give us a call. We'll be glad to recommend the right kind of wire for your job.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Bethlehem **COLD-HEADING WIRE**

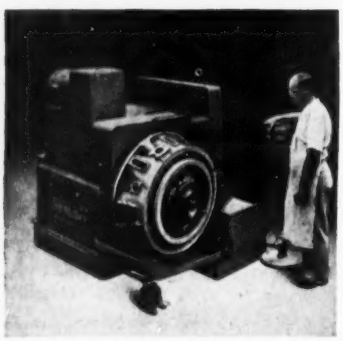
BETHLEHEM STEEL



Jet Aircraft Part Gets

40 BORIZING OPERATIONS

in 12 minutes



MAKING DIFFICULT JOBS easy is a Heald specialty. Here's a typical example.

Eight circular flanges on this jet-engine compressor frame require *five* individual borizing operations to very close tolerances. Yet with the Heald way-type Bore-Matic shown at the left, the entire job—including loading and unloading—takes only 12 minutes per part.

The number 3 size way leg unit, with rotary fixture mounted low on the base, simplifies loading of the heavy, awkward part. The rotary fixture is manually indexed and positioned by an air-operated locator pin with foot-valve control. Operations performed include chamfering, turning, facing, forming and blending two radii. Borizing operations at each of the eight positions are completely automatic.

Remember, when it comes to precision finishing, it pays to come to Heald.

Internal and Rotary
Surface Grinding Machines
and Bore-Matics

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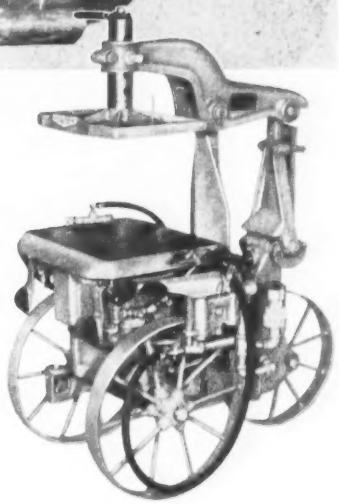
OSBORN Molding Machines and Core Blowers give you uniform and accurate sand reproductions of your patterns and core boxes. Variations in density and hardness experienced with hand rammed methods are eliminated assuring uniform accurate castings.

With Osborn molding equipment top quality molds and cores are turned out with less operator effort and skill . . . to cut your foundry costs.

To insure top quality castings . . . top production per man-hour, Osborn has a right machine for every foundry molding need. A factory-trained Osborn molding specialist will gladly analyze your requirements and recommend the most efficient equipment from Osborn's complete line.

Write *The Osborn Manufacturing Company, Dept. EE-6, 5401 Hamilton Avenue, Cleveland 14, Ohio.*



Osborn Jolt Squeeze Stripper 275 J. Top performer throughout the foundry industry for accuracy, dependable production, low cost operation.

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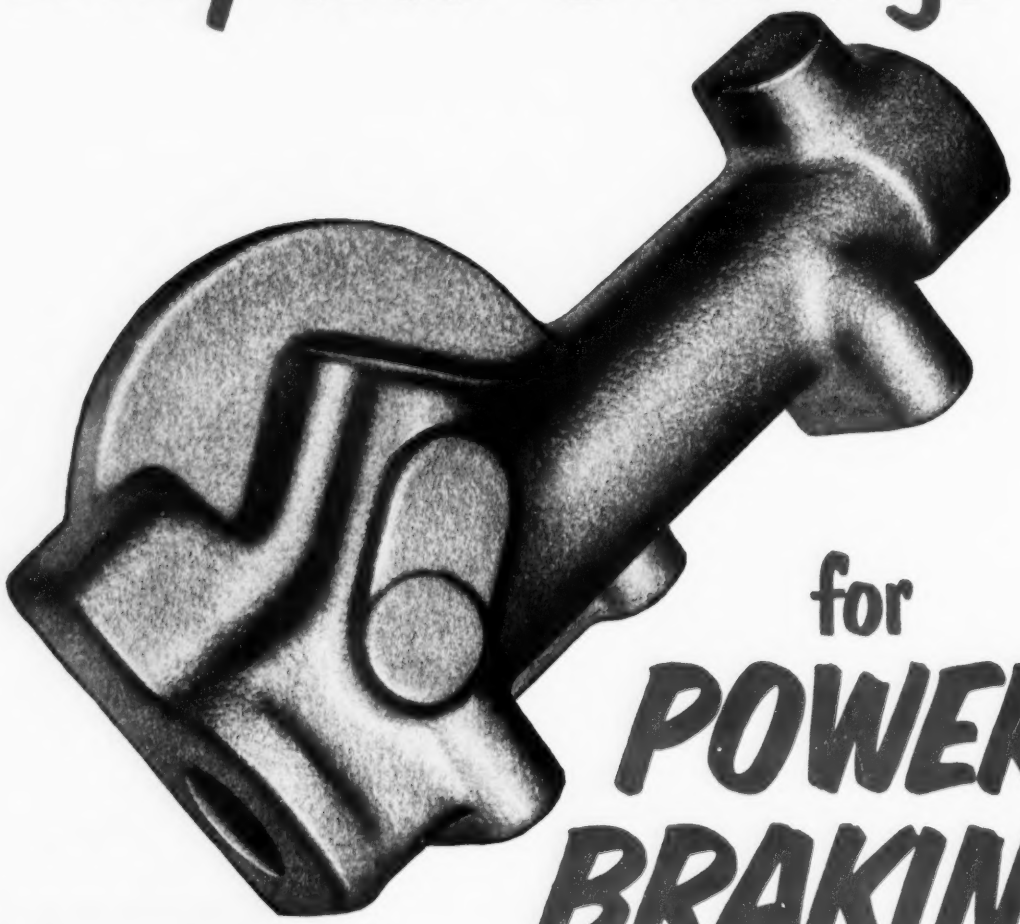
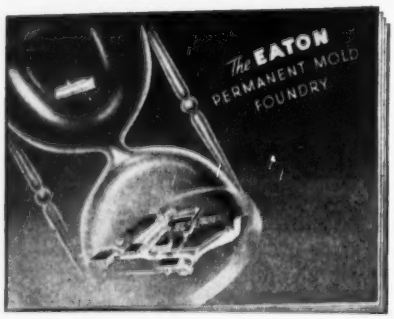
Eaton Permanent Mold Gray Iron Castings—



for POWER BRAKING



Send for your free copy of the 32-page illustrated booklet: "The Eaton Permanent Mold Foundry." It tells the story of Permanent Mold Castings and takes you on a picture-tour of the Eaton Foundry at Vassar, Michigan.

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This Week in Metalworking

STEEL

Vol. 132 No. 23 June 8, 1953

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Editorial, Business Staffs—16. Advertising Index—159. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $7.50; two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1953 by Penton Publishing Co.

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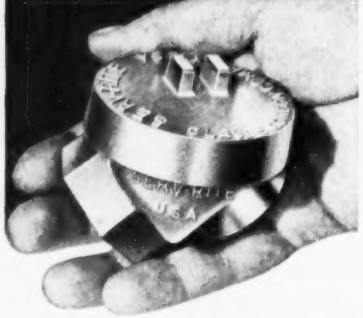
"SERV-RITE"
THERMOCOUPLE
HEAD



the head that's ahead in every way . . .

This new "Serv-Rite" thermocouple head is actually small enough to be held comfortably in the palm of your hand. But size is only one of the many features that make this thermocouple head really extraordinary. It is loaded with installation and service conveniences that any user of thermocouples will appreciate at once.

The body is of malleable iron, cadmium plated for durability. A new type friction lock assures easy removal or tightening of the cap — a quarter turn does it. An asbestos gasket makes the head dirt- and moisture-proof. With a choice of ½", ¾", or 1" IPS opening for the protecting tube, you can standardize on one style head.

The connector block is of a material especially selected to withstand, without damage, temperatures up to 900° F. in continuous service. Improvements over the conventional type of inserts greatly simplify the making of the lead wire connections. The complete thermocouple element, including connector block, can be easily withdrawn for inspection.

Install a "Serv-Rite" thermocouple head and see for yourself how much better it really is.

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behind the scenes

Anyone for Pickle Liquor?

Perennial headache of the metallurgical industries for many years has been what to do with waste pickling liquors.

Steel men perked up their ears last month when Blaw-Knox Company announced a new process for recovering the entire sulphate equivalent of waste pickle liquor as reusable sulphuric acid. STEEL carried an exclusive story on this process in its April 27 issue.

Bruce Alexander, Assistant Manager of Sales at Blaw-Knox Company in Pittsburgh, telephoned Dr. Allen Gray, STEEL Technical Editor and author of the article, to compliment him on the fine treatment given the process and to tell him of the unusually active interest the article had generated.

Said Alexander, "We've even had bona fide inquiries from a dill pickle processor and from a naive gent who wanted to know whether pickle liquor had as much kick as the corn variety."

Skohl!

Meat and Bread Technique

Here's a sandwich-making technique which you should find useful in your daily dealings with the folks at the plant.

We picked it up from a real common sense booklet written by Eugene J. Benge entitled "Getting Along with People."

It has to do with the dishing out of criticism. Mr. Benge suggests that if you find it absolutely necessary to reprimand an employee that you apply his sandwich technique. Example:

Sam rigged up a special weight on his drill press so that he could increase his piece-rate earnings—but he spoiled more work and used up too many drills. His foreman said:

"Sam, I've been studying your production record over the past few weeks." (BREAD)

"You certainly have improved since you've been on the job." (BUTTER)

"But your spoiled work is entirely too high . . . and so is your spoilage of drills. That weight you've attached to your drill press is responsible, of course, so I guess you'll have to take it off." (MEAT)

"It looked like a smart idea. Showed you were thinking about your job." (BUTTER)

"See if you can't figure out some other way to increase your production, will you? Maybe you'll hit the jackpot on the next one." (BREAD)

We think this kind of sandwich is very palatable, especially if you use a high grade of butter and if the bread's not too stale.

Prolific, Aren't We?

"Did you know," asked George (slide rule) Auner, STEEL's statistician, "that the Nation's population has increased almost six times in the past century . . . from 23 million in 1850 to 151 million in 1950?"

"Did you know," George continued, "that the total U. S. population, including the Armed Forces overseas, was 157.5 million in September, 1952? . . . or that the most recent projection of the 1955 population made by the Bureau of the Census is 163 million?"

No, George, we didn't know. But we know now.

My, what will they blame television for next????

More Daffynitions

A new crop of Daffynitions has just been received and these come to us through J. Klenk of the Best Steel Company, Cleveland, Ohio. They have a decidedly ideological flavor and are particularly significant at this time:

SOCIALISM—You have two cows, you keep one and give the other to your neighbor.

COMMUNISM—You have two cows, the government takes both of them and gives you some of the milk.

FASCISM—You have two cows, the government takes both of them and sells you some of the milk.

NEW DEALISM—You have two cows, the government takes both of them, shoots one, keeps the other which it milks and then throws the milk away.

CAPITALISM — You have two cows, you sell one and buy a bull.

Shrdlu

(Metalworking Outlook—Page 39)

Wellman will build it

Special Cranes
Skip Hoists
Ore Unloaders
Charging Machines
Forging Manipulators
Car Dumpers
Gas Flue Systems
Gas Reversing Valves
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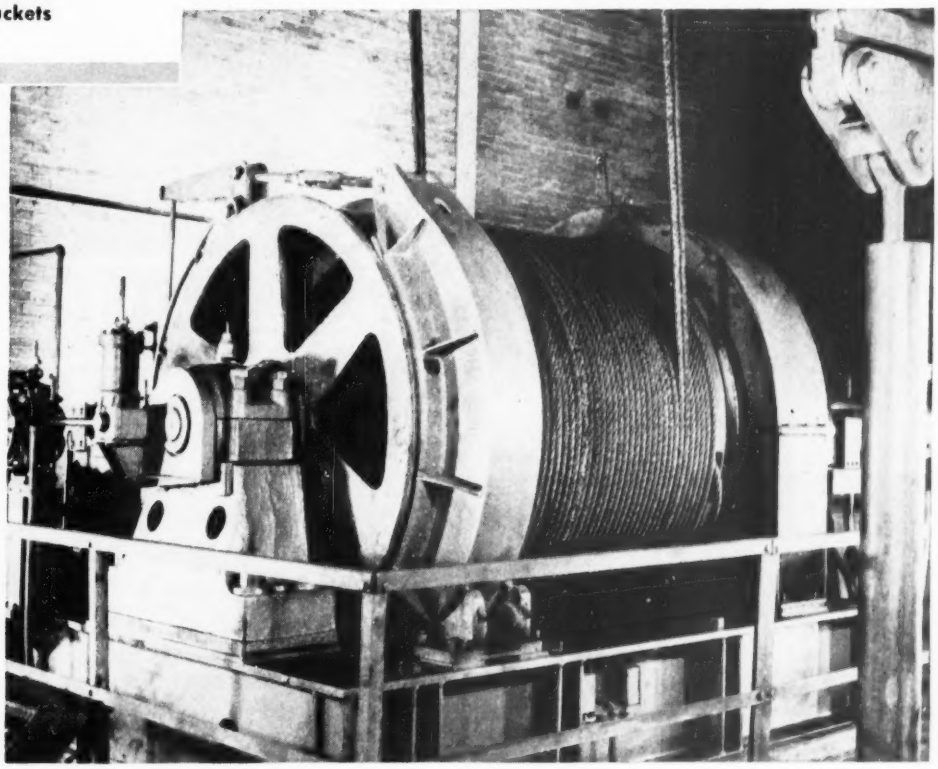
Wellman skip hoists

Speed blast furnace materials handling



Wellman 6-ft., Single Drum Blast Furnace Skip Hoist.

● Wellman Skip Hoists are recognized throughout the steel industry for their smooth, reliable operation. They incorporate design advancements and engineering recommendations based on many years of proved performance. Wellman equipment for steel mills is backed by more than half a century of experience in designing and building for economical service.

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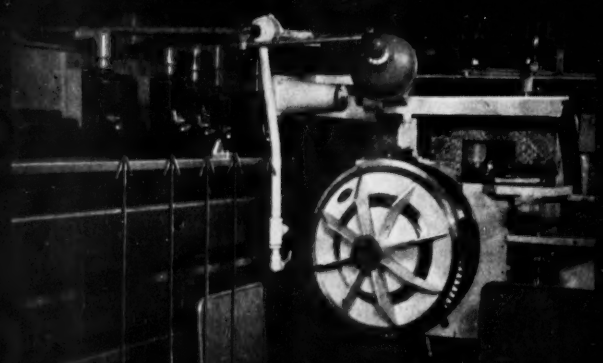
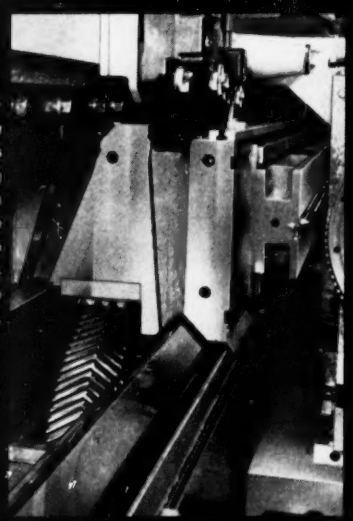
LAPOINTE *offers*



LIMIT SWITCHES for operating DUAL SPEED and DUAL CYCLE (Patented*)

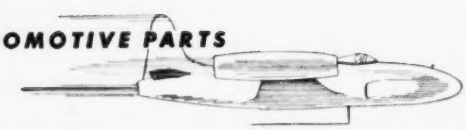
The Dual Speed feature permits the machine to be operated at two predetermined speeds for the same broaching stroke. Dual Cycle is the exclusive LAPOINTE feature that has been developed for successful broaching of jet engine components without requiring tool changeovers for the accuracy required.

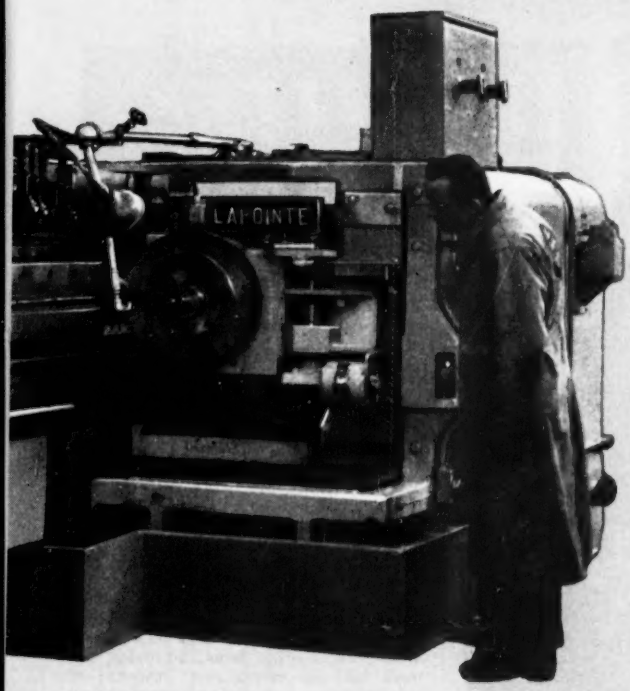
Two of the reasons for the smooth, positive functioning of this new LAPOINTE Broaching Machine are seen in this picture showing the large diameter continuous-tooth herringbone gear and rack, and the guiding of the massive main slide.



*No. 2,617,333

FASTER BROACHING OF JET ENGINE PARTS AND AUTOMOTIVE PARTS





LAPOINTE 30/180" SRHE, 2 broaching Turbine Wheel J57.

The electro-mechanical drive accounts for the remarkable versatility and flexibility of this newly developed single ram horizontal broaching machine. Note that the cutters are *at eye level.*

new ELECTRO-MECHANICAL DRIVE *horizontal* BROACHING MACHINE

for SURFACE BROACHING *at speeds up to* 300 fpm!

Now, for the first time, there is practically unlimited opportunity to make tests to determine the best broaching speed for any particular metal! Once the proper speed is found, this new LAPOINTE Broaching Machine will give

- **substantially increased production**
- **better finish and**
- **greater accuracy through freer cutting action.**

Carbide-tooth broaches and HSS broaches both perform exceptionally well on this machine, which is fully described in a new bulletin available on request. Ask for *Bulletin SRHE-3.*

Another striking example of Lapointe engineering leadership, with everything designed and built at one source . . . no divided responsibility!

Industry looks to Lapointe for the latest developments in broaching machines, tools, and fixtures.

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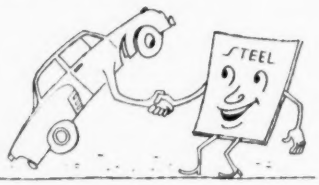
LETTERS
TO THE EDITORS

Standardization Grows



We were much interested in your article "Materials Handling Standards: They're Easing Military Procurement Costs" (May 11, p. 122). We have had a considerable program of material handling standardization under way for approximately two years, and were consequently cognizant of many of the problems mentioned by you.

As a part of this program of standardization, we have established liaison with a number of other large industries, and have had an enthusiastic response to our suggestion concerning an interchange of information. We find this interchange has been mutually beneficial.

We feel that we have made considerable progress, although we are fully aware of the long road still ahead. We have developed standard specifications on industrial trucks, batteries, and some other components, metal containers, casters, highway trailers, steel packaging, and certain building facilities.

J. T. Heffernan, chairman
Material Handling Standards Subcommittee
Material Handling Engineering Department
Ford Motor Co.
Dearborn, Mich.

Who's Handicapped?

We think your story "The Handicapped: It's Good Business To Employ Them" (May 11, p. 86) is a splendid story and we would appreciate having your permission to reprint it in our DAV semimonthly newspaper.

John W. Burris
acting national director
of employment
Disabled American Veterans
Washington

• *Permission granted.—ED.*

Your story on employing the handicapped has been read with considerable interest. Will you send us 1000 copies for use in promoting the employment of the handicapped.

William P. McCahill
executive secretary
President's Committee on National
Employ the Physically Handicapped Week
Washington

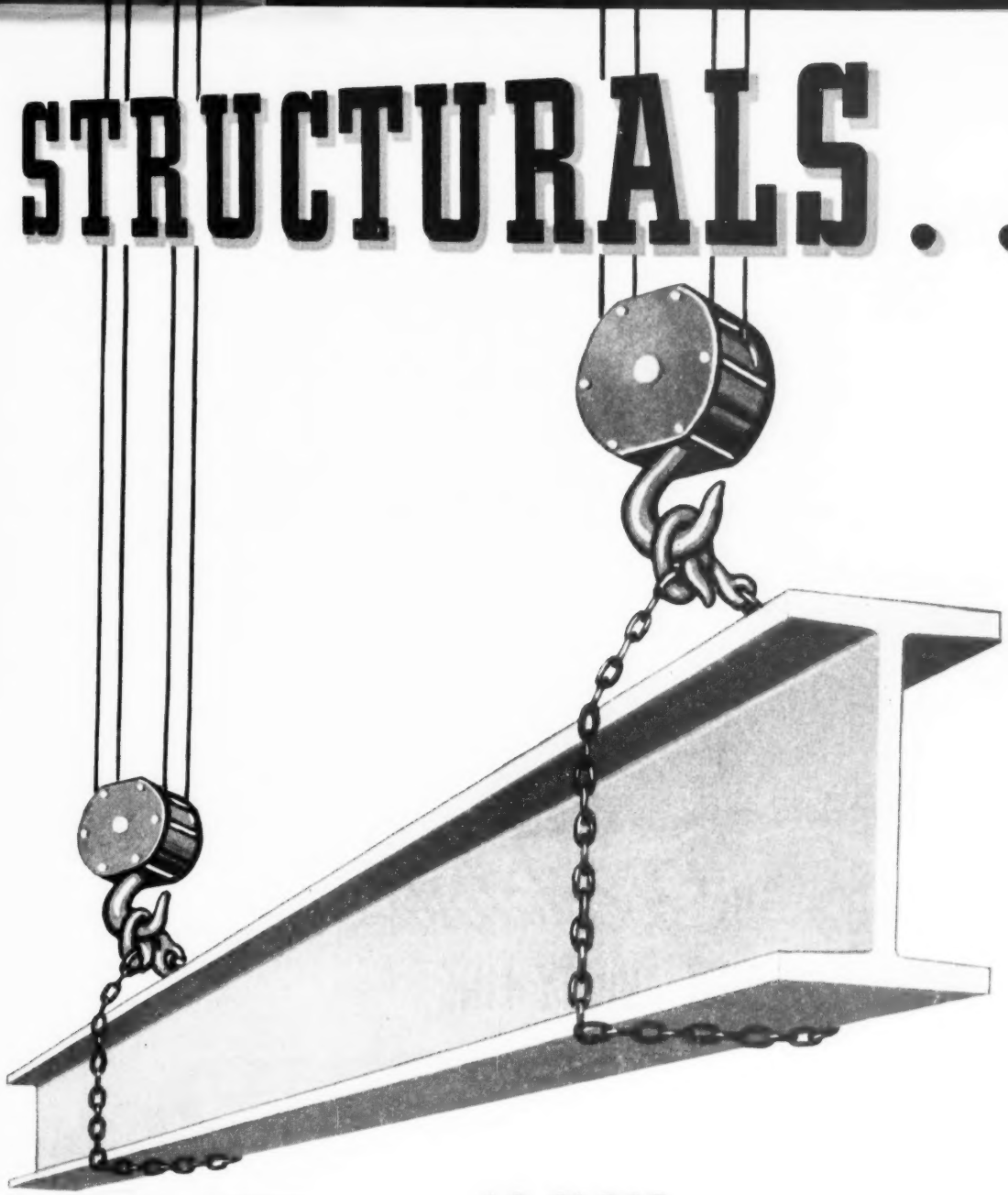
• *Sent.—ED.*

Salvaging Pickling Liquors

Your article "Reuse Waste Pickling Liquors" (Apr. 27, p. 130) was of much interest to me. I was wondering if you would be able to furnish me with information concerning the cost of operation, about what percentage yield of sulphuric acid has been realized and about what percentage hydrochloric acid is recovered for reuse? I gather from

Please turn to page 12

STRUCTURALS . . .



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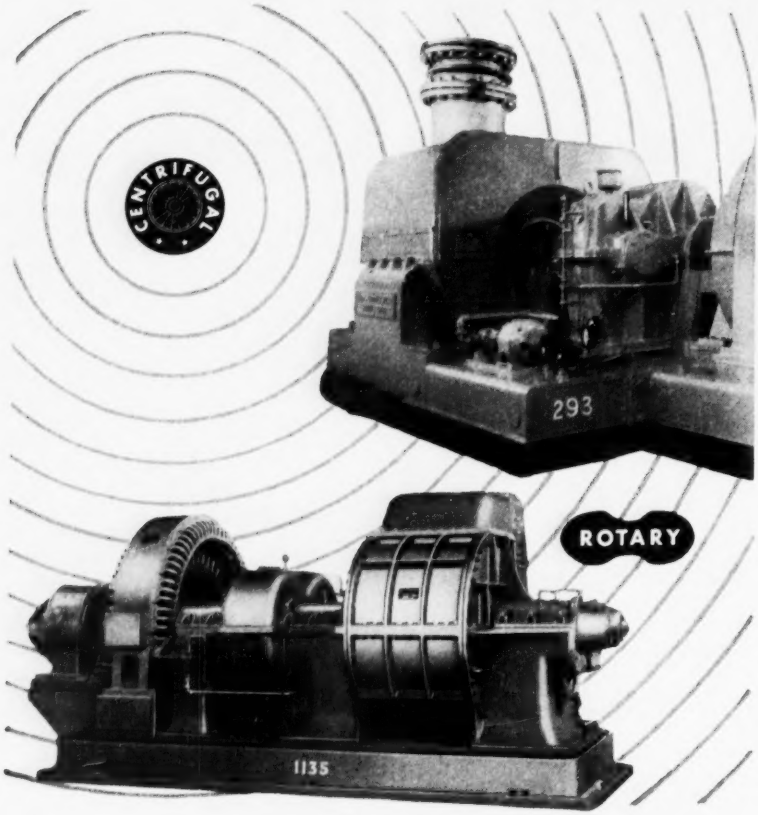

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Thus, this exclusive *dual-ability line* permits selection (without prejudice as to types) to meet the needs of most moderate pressure applications. Regardless of their sizes or types, R-C Blowers are unmatched in reliability, operating economy and long-time performance. Built into them is almost a century of specialized experience in handling gas and air, which is our exclusive business.

In addition to blowers and exhausters, R-C products include a wide range of gas and vacuum pumps, meters, inert gas generators and other related equipment. So, whenever you have a need for moving or measuring gas or air, we suggest consultation with the R-C Specialists.

ROOTS-CONNERSVILLE
Exclusive Specialists in Handling Gas and Air

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A DIVISION OF DRESSER INDUSTRIES, INC.
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LETTERS

Concluded from page 10

your article that the Blaw-Knox Co. has been instrumental in developing this process. May I ask whether their interest is in constructing such units or do they have patent rights on the process in any way?

James E. Phillips
32 N. Turner Rd
Youngstown, O

• *Write to Bruce Alexander, Blaw-Knox Co., 930 Duquesne Way, Pittsburgh 22.—ED.*

Another Good Analysis

Once again, you are to be congratulated on the "28th Annual Financial Analysis of the Steel Industry" (Apr. 20, opp. p. 74). Will you be good enough to send along to us 20 copies of this report?

Frank A. Little
director of purchases
Keystone Steel & Wire Co
Peoria, Ill

I shall appreciate your sending me five copies of the analysis . . .

Charles F. Stone
chairman of the board
Atlantic Steel Co
Atlanta, Ga

I would appreciate two additional copies . . .

A. F. Franz
president
Colorado Fuel & Iron Corp
Denver, Colo

• *Sent.—ED.*

Hands Across the Sea

We'd like to take this occasion to acknowledge the immense amount of information we have obtained from the pages of STEEL during the many years we have been readers of your magazine.

The Reader's Service is an admirable institution and we do appreciate the facilities it offers us on this side of the Atlantic in keeping up to date with American production methods.

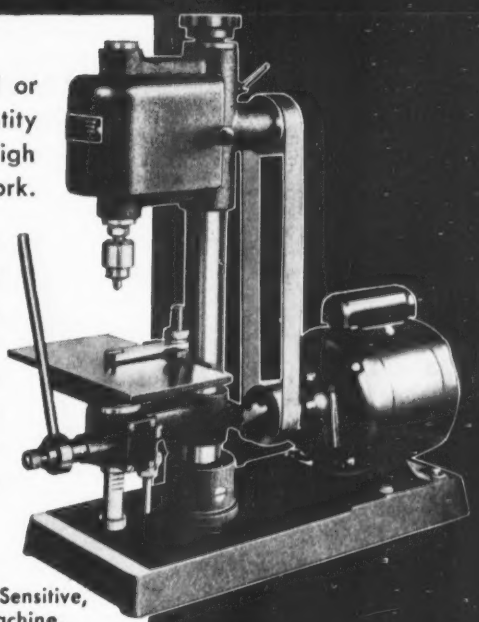
H. Styring
Sanderson Brothers & Newbould Ltd.
Sheffield, England

YOU CAN DRILL OR TAP TINY, PRECISION HOLES . . . ON A *PRODUCTION* BASIS . . . WITH *MINIMUM* SCRAP AND *MINIMUM* TAP AND DRILL BREAKAGE

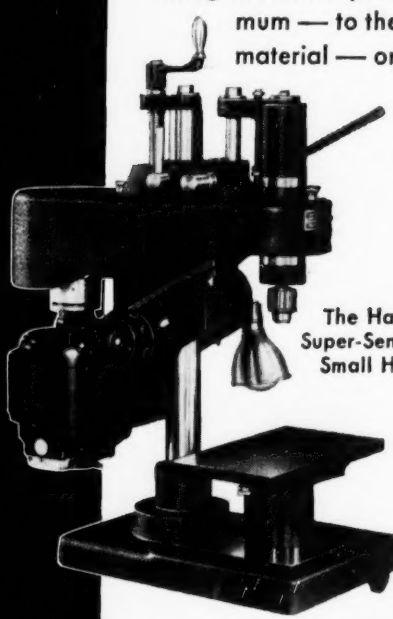
BUT YOU **MUST** FIT THE TOOL TO THE JOB

When your job calls for tiny, precision holes, drilled or tapped, rely on this; such holes can be produced in quantity and within allowed tolerances only on super sensitive, high precision machines **designed and built** for this class of work.

HAMILTON Drilling Machines and Tapping Machines are super sensitive and extra accurate; **designed and built** for the production of tiny, precision holes. The drilling machines produce holes **up to** 0.3125" maximum — to the center of 10" — in **any** drillable material — on fast production schedules. The tapping machine is designed to use the smallest and finest tap and **up to** 10-32 inclusive.



The HAMILTON® Super-Sensitive, Small Hole Tapping Machine.



The Hamilton VARIMATIC® Super-Sensitive, Variable Speed, Small Hole Drilling Machine.

Multiple spindles also . . .

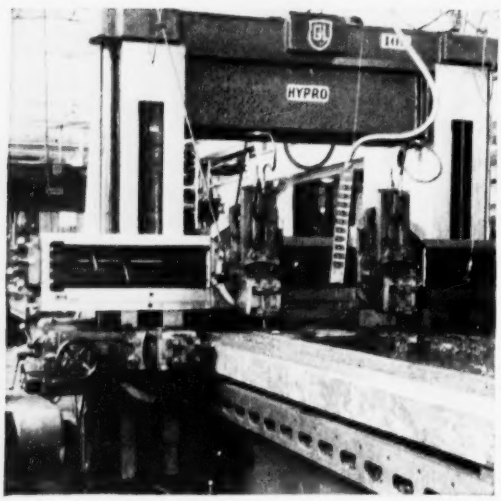
Acquaint yourself with Hamilton Super Sensitive, Small Hole Drilling and Tapping Machines and be ready for the challenge ahead. Ask for our FREE Bulletin DT-5308.

THE Hamilton TOOL COMPANY

848 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

Planing semi-steel at 300 feet per

G&L Hypro Planer's power and rigid construction permit year in, year out, optimum accuracy in high speed carbide cutting to 1" depth at feeds from 3/64" to 1/8"

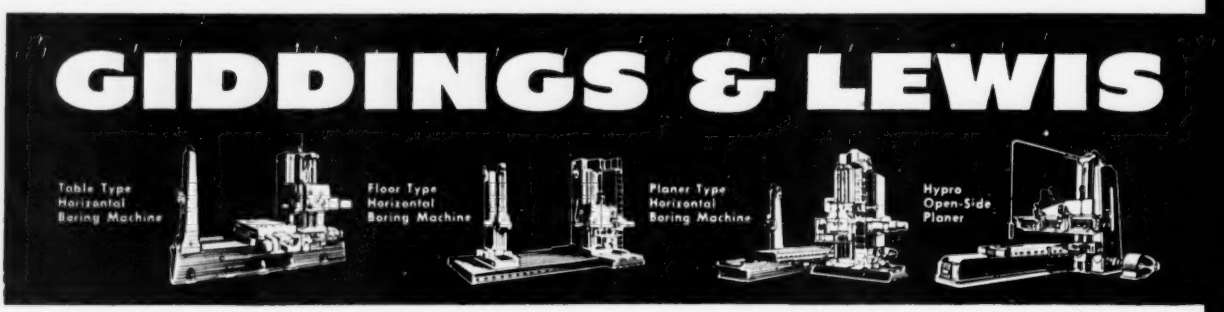


This photo shows the G&L Hypro Planer's fourth cutting head. On this operation, all cutting heads are used — production is increased, setup time is minimized.

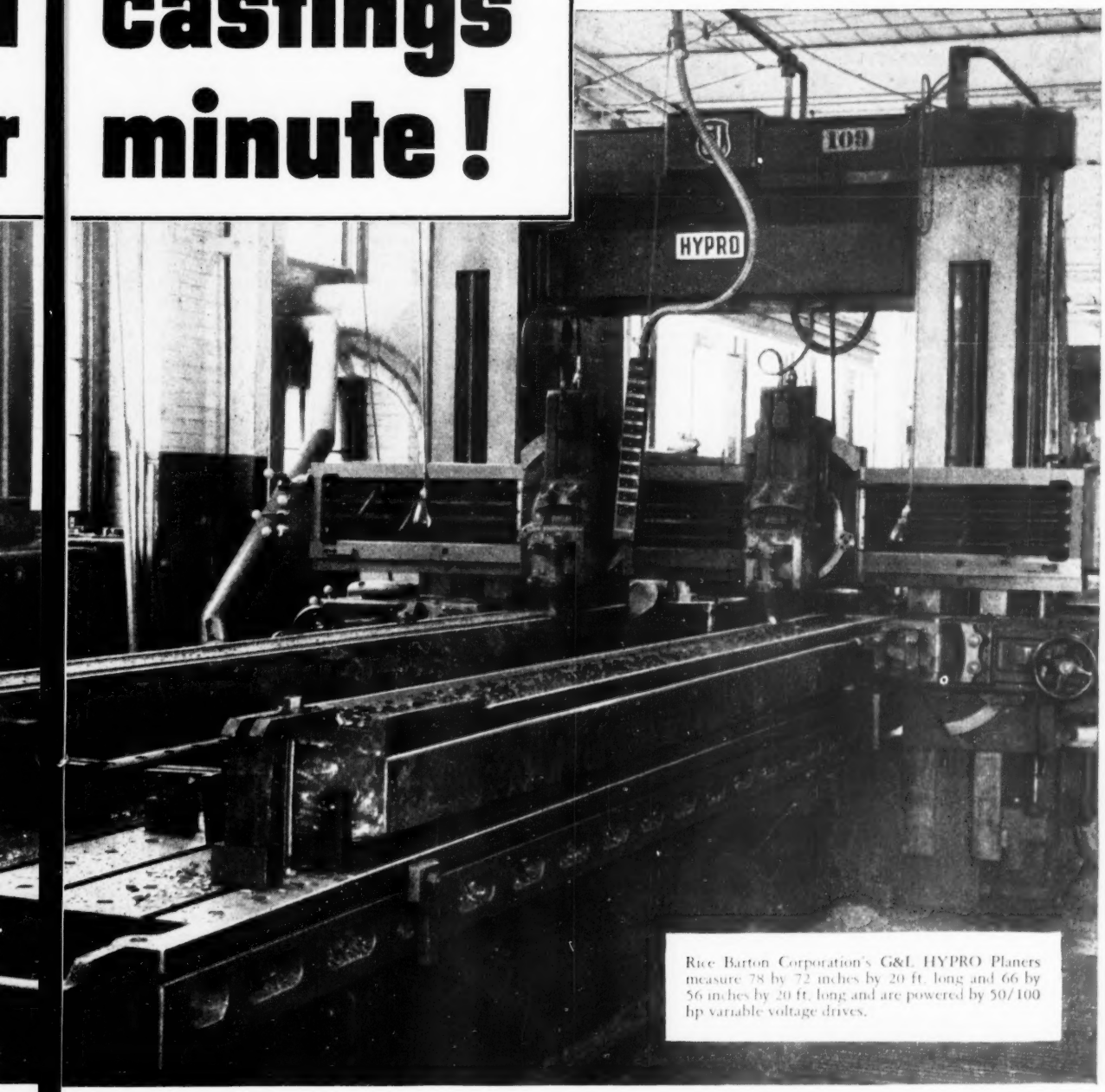
SINCE 1947, Rice Barton Corp. of Worcester, Mass., has been using two G&L HYPRO Double Housing Planers to produce parts for paper mill and textile machinery. With them, semi-steel castings (30 to 40% steel), are being planed at speeds from 240 to 300 surface ft. per minute . . . with depth of cuts from ¼ to 1 inch . . . feeds from .045 to .125 inch. Mild steel parts are being planed at the same speeds, but at a maximum depth of ½ in. and a feed of approximately .030 inch.

Though shock on the carbide tools is very great due to irregular contours and interrupted surfaces, no tools have been broken in nearly a year of operation. This economical use of carbide tools is primarily possible because the G&L planers have the following features — sufficient power, (50/100 hp variable voltage drives) — double helical table drive which provides a straight flow of power with no side thrust — rigid construction of rail as well as rail head — and inverted dovetail slide construction.

If you'd like to know how G&L machine tools can help you speed your work by taking advantage of the latest cutting tool developments contact your nearest G&L representative and he'll be glad to give you the details on the G&L Job Analysis Service. If you don't know where to reach him, write direct.


GIDDINGS & LEWIS
Table Type Horizontal Boring Machine
Floor Type Horizontal Boring Machine
Planer Type Horizontal Boring Machine
Hypro Open-Side Planer

castings minute!

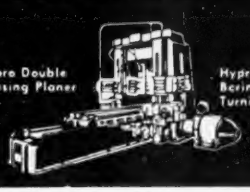


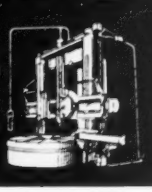
Rice Barton Corporation's G&L HYPRO Planers measure 78 by 72 inches by 20 ft. long and 66 by 56 inches by 20 ft. long and are powered by 50/100 hp variable voltage drives.

G-22

MACHINE TOOL CO.

Hypro Planer Type Milling Machine


Hypro Double Housing Planer


Hypro Vertical Boring and Turning Mill

G&L HYPRO

FOND DU LAC
WISCONSIN

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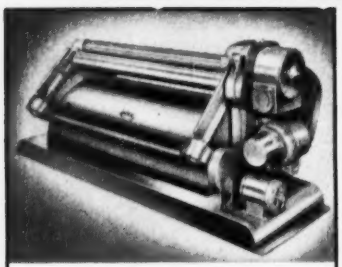
ENGINEERING CO.

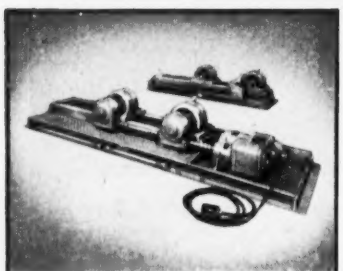
Modern
Metalworking
Equipment

- BENDING ROLLS
- TURNING ROLLS
- AUTOMATIC WELDING FIXTURES



REED PLATE BENDING ROLLS

- ★ In 18 models, ranging from 3 ft. x 10 ga. to 8 ft. x ¼" in capacity
- ★ Rugged, all steel construction
- ★ Built-in, silent worm gear drive
- ★ Durable, special bronze bearings
- ★ Power adjustment & air drop end available on most models



REED PORTABLE TURNING ROLLS

- ★ In 5 models; capacities up to 75 tons
- ★ For hand or automatic welding, finishing operations on tanks up to 14 ft. diam.
- ★ Reversible, variable speed adjustment
- ★ Rugged, all-steel construction
- ★ Built-in silent worm gear drive

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to write us for specifications, prices, list of REED users near you. No obligation. Just write on your letterhead.

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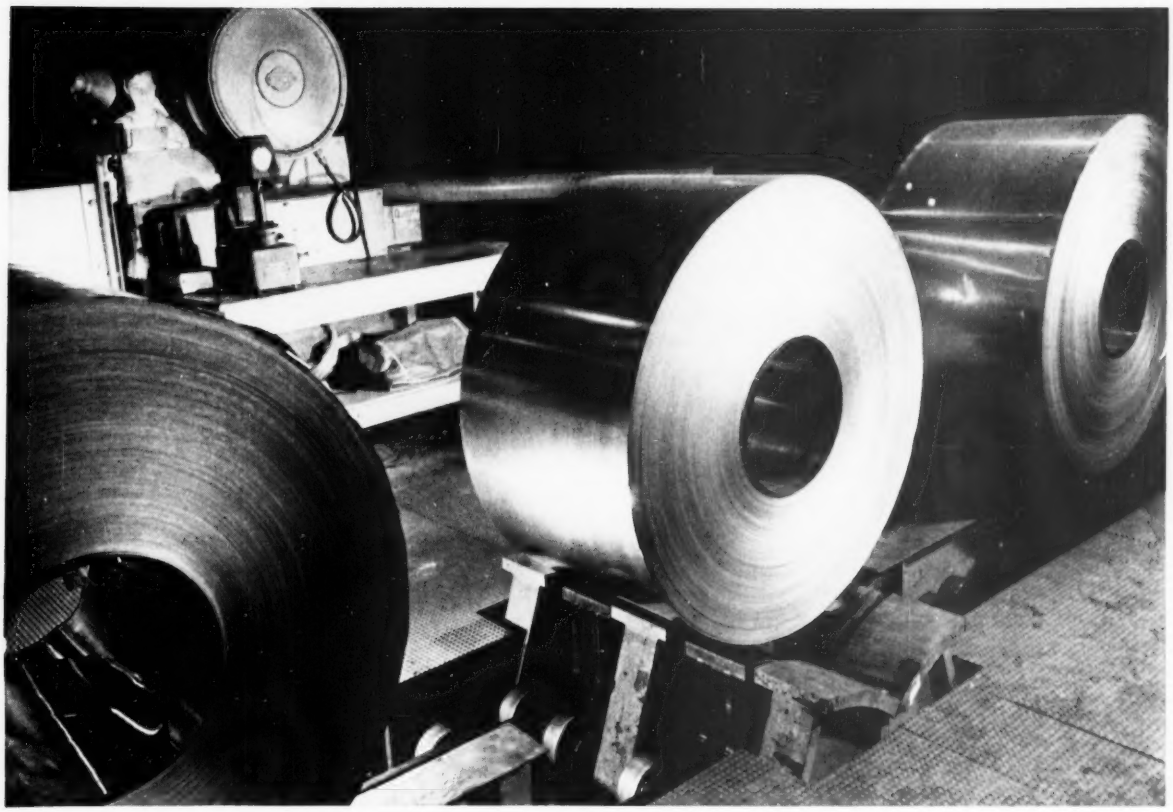


Precise weights of up to 40,000-lb. coils are recorded as they move along Link-Belt saddle top conveyor at temper mill delivery end.

Why Jones & Laughlin again selected LINK-BELT coil conveyors

Yield goes up . . . waste goes down handling 40,000 lb coils

HERE'S one mill that knows from experience how effectively Link-Belt conveyors cut coil handling costs. So pleased has Jones & Laughlin been with Link-Belt performance on their pickle line and five-stand tandem mill installed in 1948 that they again chose Link-Belt coil conveyors for their newest temper mills, cleaning and shearing lines.

In mills all over the country, Link-Belt conveying systems eliminate hours of lost time. Coils travel close together. They're handled gently, preventing edge damage. Down-time is reduced. Auxiliary devices transfer coils from one conveyor to another—turn, lower, tilt and weigh them with ease and precision. This increased mechanization means greater safety, reduced physical work for crews.

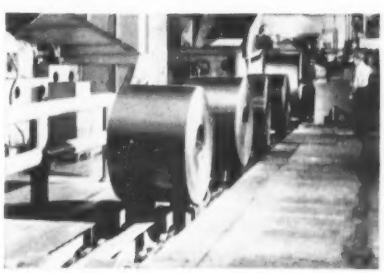
It pays to call in Link-Belt while expansion is still in the planning stage. The Link-Belt engineer—working with your own engineers, consultants and builders of mill and process equipment—can help you select the right conveying system for your exact needs.

13-262

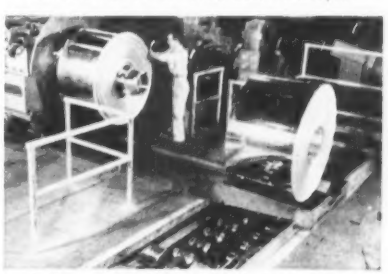
LINK-BELT

MATERIALS HANDLING, PROCESSING and POWER TRANSMISSION MACHINERY

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Scarboro, Ont. (Canada), Toronto (Canada), Elmira, Ont. (Canada), Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.



At entry end of temper mill, coils are handled on 49 ft. Link-Belt Conveyor.



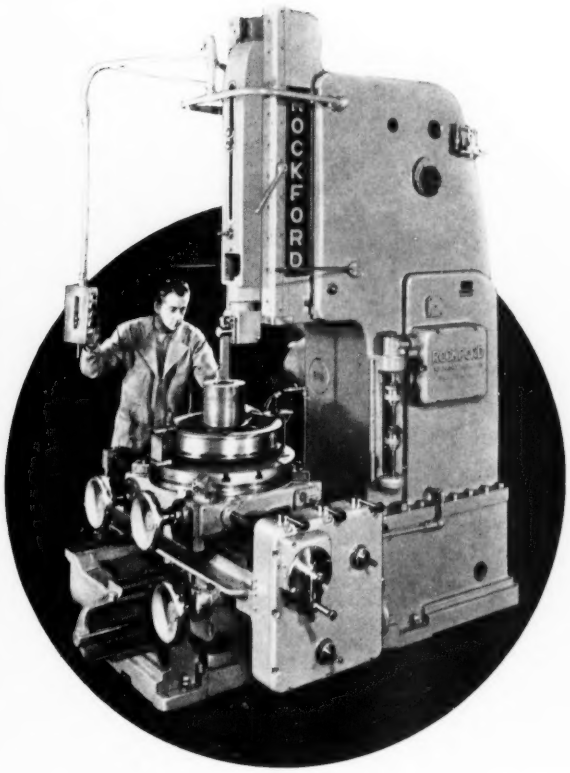
Coils are lifted from Link-Belt conveyor to pay-off reel by hydraulic buggy.

hydraulic drive...a natural for

CHECK-POINT OF MAXIMUM INVESTMEN

Rockford Machine Tool Co.

reciprocating machine tools



Hydraulic Drive and Feeds, as basic features in modern machine tool design, provide outstanding performance, measured in terms of work quality, high production and low operating cost.
We have had over 25 years of experience in applying Hydraulic Drives and Feeds to Shapers, Planers and Slotters.

rockford hydraulic slotters

Powerful Hydraulic Fulcrum Drive to Ram
10° Tilt to Ram
Swiveling Tool Head
Pendant Controlled Cutting Speed Changes, infinitely variable.
Hydraulic Feeds in all Directions
Power Rapid Traverse in all Directions
Stroke Length Adjustment when Ram is in motion.
Dividing Head, Standard Equipment
Optional—Traveling Column for Greater Capacity

shaping / planing / duplicating / turning

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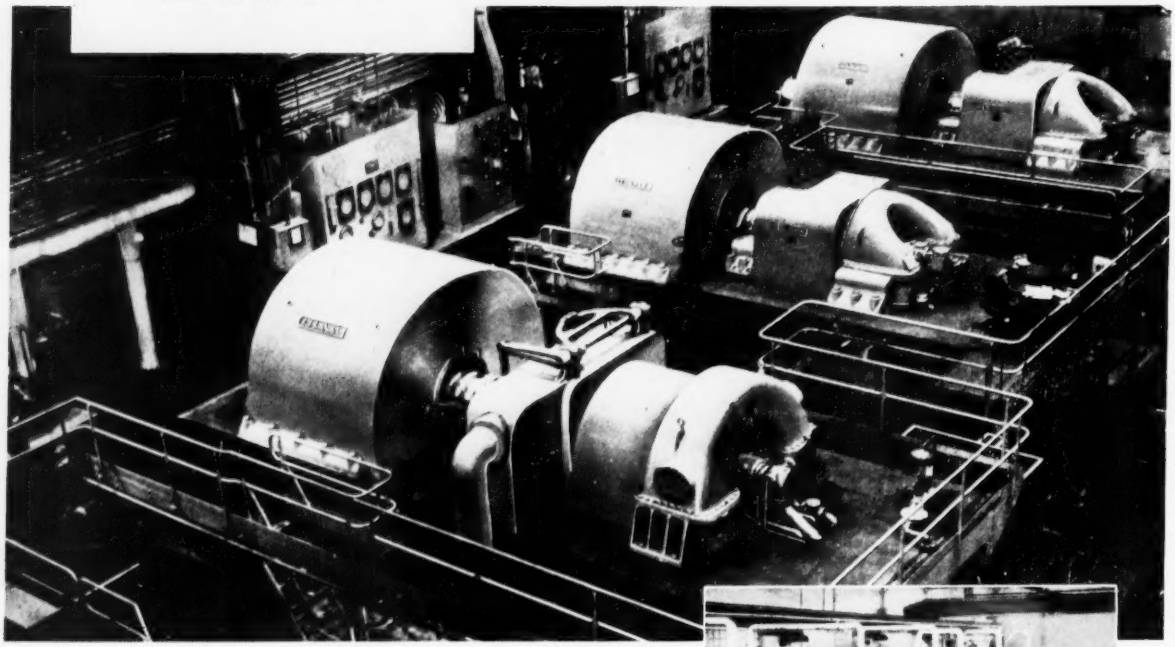
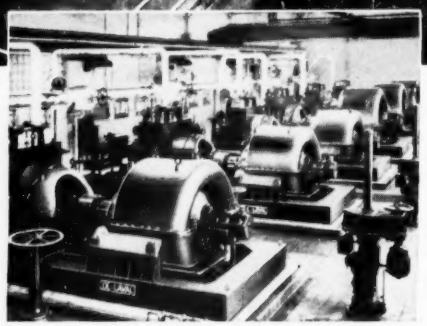
DE LAVAL
STEEL MILL BLOWERS

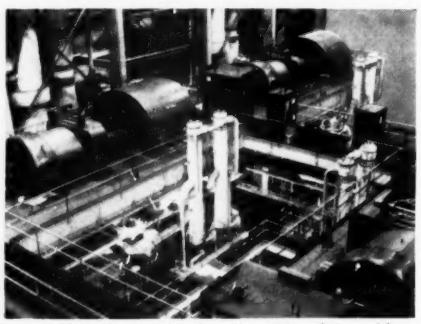
never take a "breather"



De Laval turbine-driven blowers: one rated at 123,000 cfm, others at 97,800 cfm.



De Laval turbine-driven coke oven boosters and exhausters installed in an eastern steel mill.



Three 110,000 cfm De Laval turbine-driven blast furnace blowers at a midwest steel plant.

These De Laval turbine-driven blast furnace blowers and coke oven boosters and exhausters stay on the job 'round the clock in steel plants all over the country.

There are good reasons for this power-saving dependability. De Laval heavy-duty blowers are built to take punishment. Rugged casings, husky, perfectly balanced rotors, cylindrically seated bearings are design features that reduce maintenance and insure long continuous service. Remember, there's no divided responsibility—both turbine and blower are De Laval designed and De Laval made.

For a quarter of a century, De Laval has pioneered in advanced blower engineering designs and practices. In fact, the first turbine-driven units to use steam at pressures above 700 psig and temperatures above 825F TT were manufactured by De Laval. Centrifugal blowers and compressors are built in single and multi-stage types for delivering air in volumes as high as 125,000 cfm or more for all classes of service in steel, gas and coke plants. Put this experience to work for you. Discuss your specific applications with a De Laval Sales Engineer.

DE LAVAL *Centrifugal Blowers*

DE LAVAL STEAM TURBINE COMPANY
860 Nottingham Way, Trenton 2, New Jersey

DL188

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Everything from a screw spike to a plow bolt, from a "Nylok" lock nut to a cap screw is available under the Republic Upson brand.

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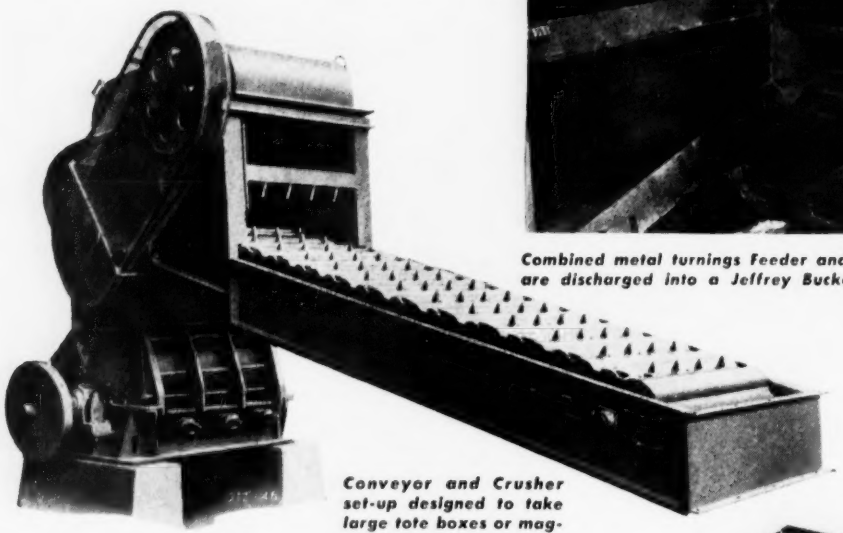
REPUBLIC STEEL
UPSON QUALITY **BOLTS AND NUTS**

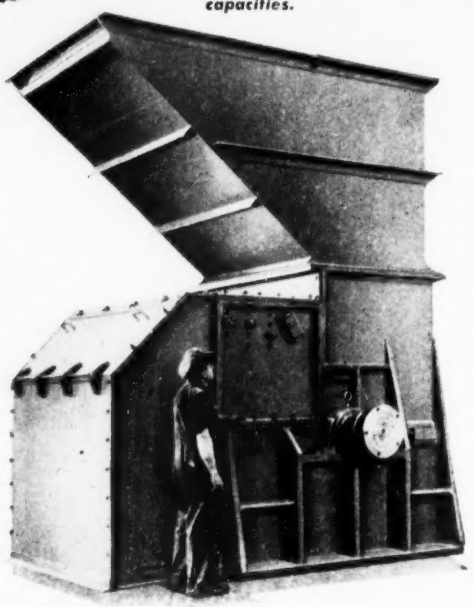
METAL TURNINGS
reduced to uniform size

Combined metal turnings Feeder and Crusher (above). Reduced turnings are discharged into a Jeffrey Bucket Elevator for delivery to storage.



Conveyor and Crusher set-up designed to take large tote boxes or magnet loads. Note toothed surface of conveyor.

Below—Jeffrey Giant Primary Crusher—for use in large scrap processing yards. Magnet or Clam Shell Bucket feed—large capacities.



FED BY HAND, MAGNET OR CLAM SHELL BUCKET

You can dump metal turnings—large tote boxes or magnet loads—onto this Feeder Conveyor. They are carried to a hinged and weighted conveyor at the top, and compressed as they are fed to crusher. Designed for reducing large volumes in automobile plants, steel mills, scrap yards, etc. Uniform feed—uniform size product.

Jeffrey Metal Turnings Crushers (patented) are built in various sizes, capacities, weights, speeds, power . . . with hopper for hand feeding to top or side, or with conveyor (as shown) for the heavier loads. REDUCE your metal turnings. The advantages are many.

THE JEFFREY MANUFACTURING CO.

ESTABLISHED 1877

Columbus 16, Ohio

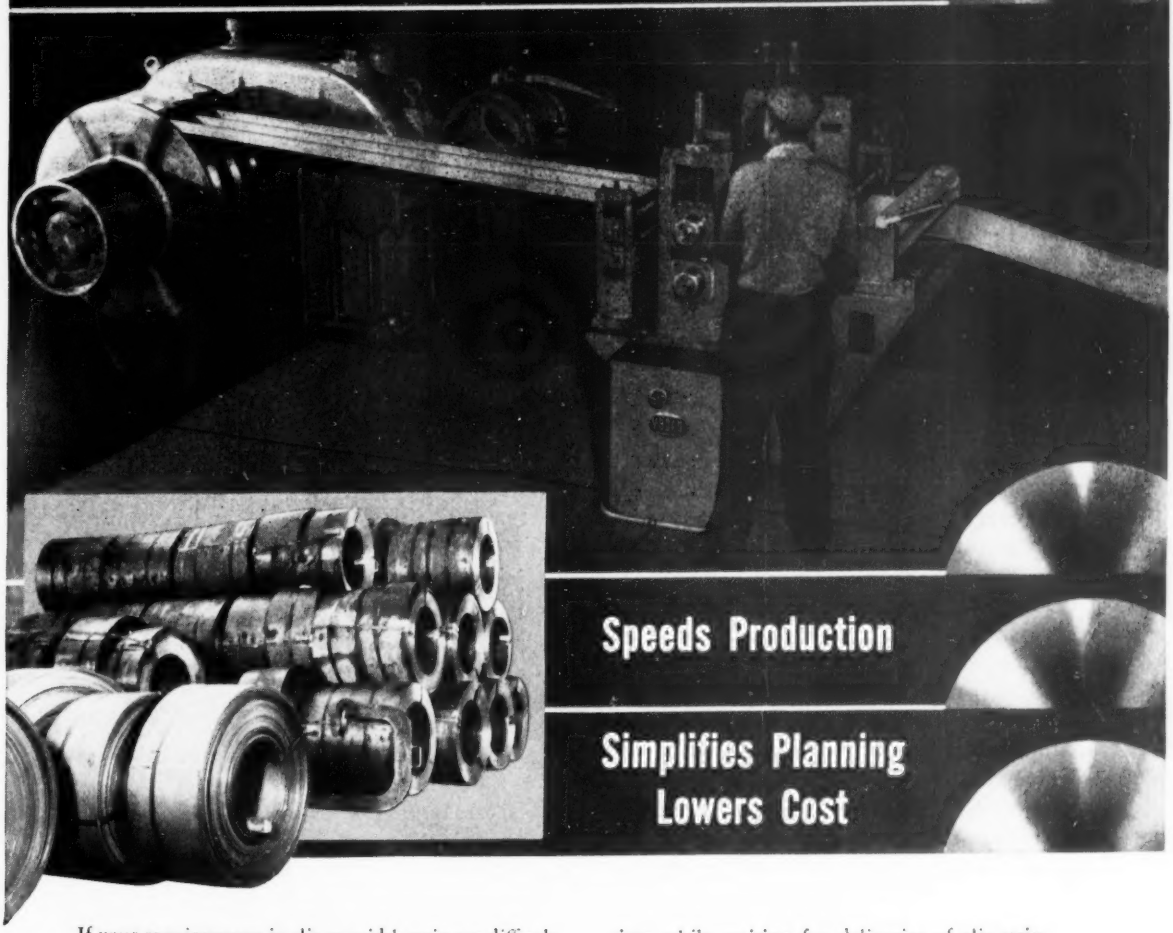
sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED

. . .IT'S A JOB FOR JEFFREY!

Double-Quick Slitting Service



Speeds Production

Simplifies Planning
Lowers Cost

If your requirements in slit-to-width strip are difficult to anticipate weeks or months in advance; if deliveries are slow and uncertain; if sources of slit strip supply are limited—a Yoder slitter may be the perfect answer to all these handicaps.

Aside from the great CONVENIENCE of being able to supply, on a few hours notice, your own needs in slit-to-width strip, from a relative small stock of standard-width coils, the *economies* effected are surprisingly great: First, by a substantial reduction in the price per ton; secondly, by elimination of idle time while waiting for deliveries of slit strip.

Your tonnage requirements, therefore, *need be no more than 100 tons per month (for narrow strands, much less) in order to make the slitter an exceedingly profitable investment.*

Yoder slitters and accessories are made in all sizes and types, for sheets as well as coils, small and large; narrow as well as wide strands; all gauges.

The Yoder Slitter Book is a practical treatise on the economics and mechanics of slitter operation. Send for it.

THE YODER COMPANY • 5502 Walworth Avenue, Cleveland 2, Ohio

Complete Production Lines

- ★ **COLD-ROLL-FORMING and auxiliary machinery**
- ★ **GANG SLITTING LINES for Coils and Sheets**
- ★ **PIPE and TUBE MILLS—cold forming and welding**

ENGINEERING YODER MANUFACTURING

CONTINUOUS OPERATION at any speed

RELIANCE V★S DRIVE with

the new *Totally-Enclosed Dual-Cooled* PATENT APPLIED FOR **motor**

For continuous operation over extremely wide speed ranges . . . or wherever unusually severe operating conditions must be met . . . the new Reliance Totally-Enclosed Dual-Cooled Motor extends the application range of the V★S Drive. Wherever high ambient temperatures, intermittent operation, prolonged low-speed operation, or severe duty cycles pose difficult cooling problems, Reliance V★S Drive with Dual-Cooled Motors have proved to be the best answer. The new Dual-Cooled Motor is available either totally-enclosed or explosion-proof, conforming to Bureau of Mines and Underwriters' specifications, in ratings from 15 through 150 hp. D-1464

GET THESE FACTS NOW!

Your request for Bulletin C-2201 will bring you this new booklet featuring large cutaway drawing with 3-color transparent overlay showing operation of Reliance Dual-Cooled Motor, together with fact-filled bulletin showing production increases and operating economies obtainable with Reliance V★S Drive.

RELIANCE ELECTRIC AND ENGINEERING CO.

1081 Ivanhoe Road, Cleveland 10, Ohio • *Sales Representatives in Principal Cities*

How temperamental can a piece of steel be?

● Plenty! Because steel is one of the most *versatile* of all materials, it can play tricks on you . . . can be mighty temperamental, even obstinate. But, properly controlled, it works for you precisely the way you want it to!

For generations, National-Standard's Athenia Steel Division has specialized in the behavior engineering of high carbon steel for the most exacting services. Here, they've learned how to take the fullest *advantage* of steel's versatility. It results in specially engineered, rigidly controlled steels that do a *better* job in all kinds of products from umbrella ribs and pen points to camera springs and piston rings.

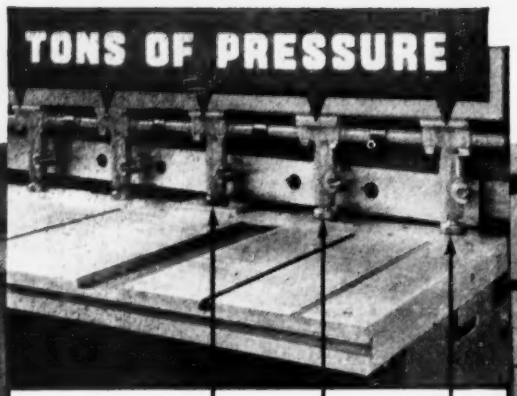
Perhaps defense production brings you new problems in the application or behavior of steel. National-Standard and Athenia offer you the kind of engineering and development service that has speeded production and cut costs for many and many a manufacturer.

NS
NATIONAL-STANDARD Company
NILES, MICHIGAN

DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD	*Niles, Mich.*	Tire Wire, Stainless, Fabricated Braids and Tape
REYNOLDS WIRE	*Dixon, Illinois*	Industrial Wire Cloth
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Metal Decorating Equipment
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

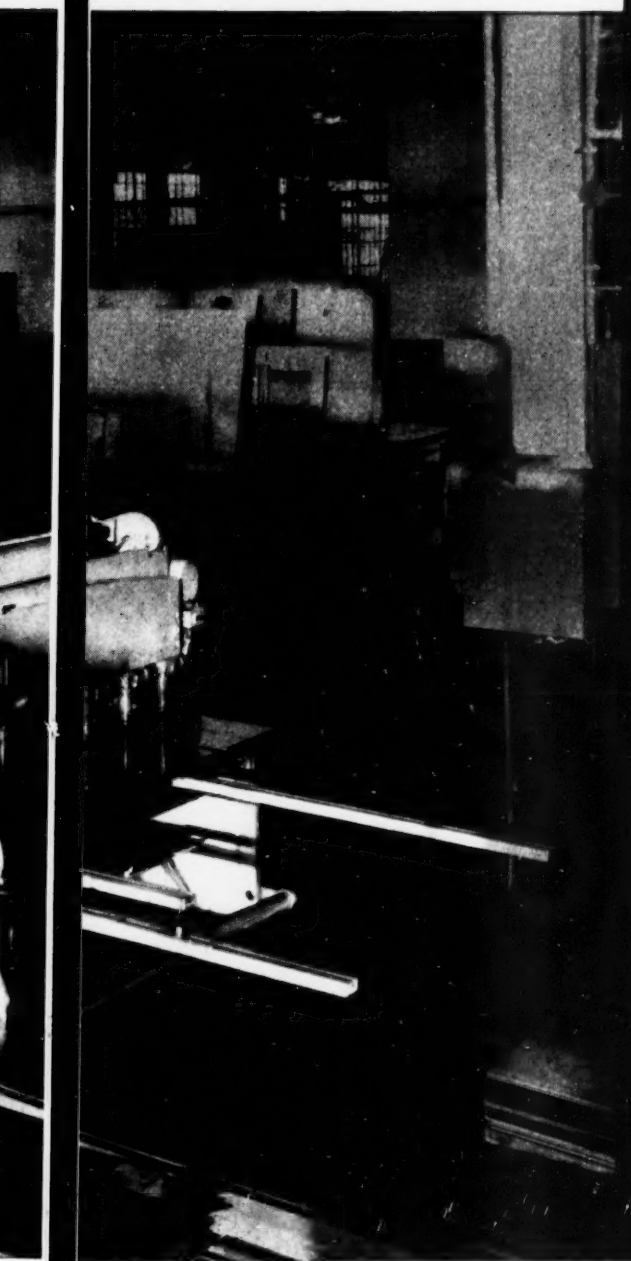
ACCURACY is



3/8" 10 Gauge Zero

Micrometer accuracy starts with Cincinnati Hydraulic Holddowns. They exert tons of pressure and automatically hold all thicknesses of work securely.

necessary



...AND THE SPEED AND VERSATILITY OF

CINCINNATI SHEARS

IS NEEDED, TOO...

Here at The W. J. Holliday Company, Inc., The Department Store of Steel—these busy Cincinnati Shears operating continuously, shear accurate blanks to customer size.

They handle cold finished, or pickled and oiled sheets up to 10 gauge and hot rolled sheets up to ¼". Both management and operators are enthusiastic about their Cincinnati Shears.

Write for Shear Catalog S-6.

Photos courtesy The W. J. Holliday Company, Inc., Indianapolis, Indiana

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

CINCINNATI

The NEW T-H Exide-Ironclad

Thrifty Hauler

★ 20% more capacity in the same space

★ Lowest cost per A.H. to own and operate

The new T-H Exide-Ironclad more than meets the heavier demands on all types of battery-powered haulage equipment. *It offers 20% more capacity in the same space*—WITHOUT SACRIFICE OF LONG LIFE!

The Thrifty Hauler incorporates the exclusive Exide-Ironclad construction *—the slotted tube positive plate*—and new structural materials that permit the use of larger positive plates, resulting in greater capacity.

The T-H line of Exide-Ironclad Batteries includes capacities for all battery-powered haulage units.

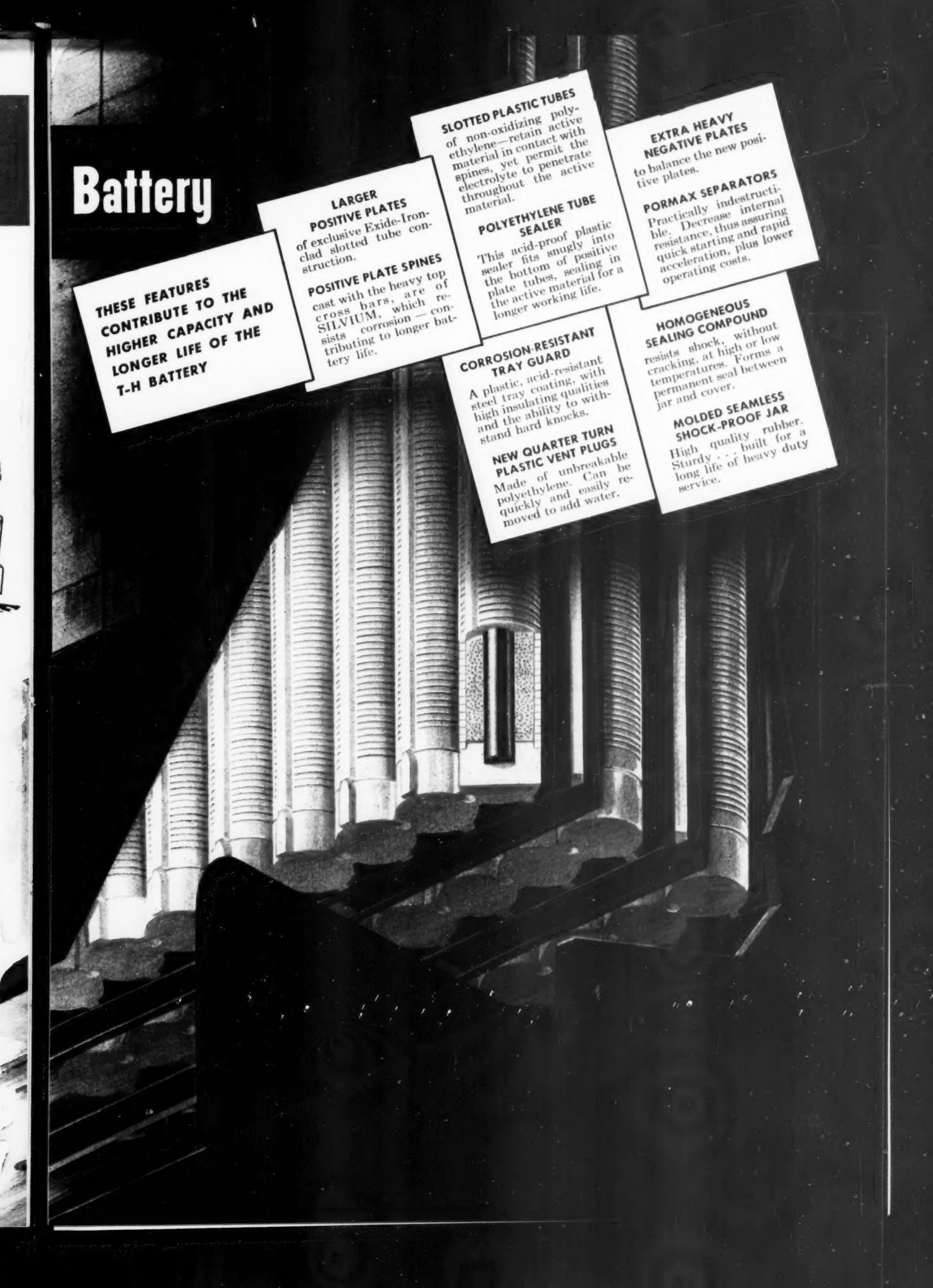
Now-more than ever before... YOUR BEST POWER BUY AT ANY PRICE!

1888...DEPENDABLE BATTERIES FOR 65 YEARS...1953

THE ELECTRIC STORAGE BATTERY CO., Philadelphia 2 • *Exide Batteries of Canada, Limited, Toronto*

"EXIDE", "EXIDE-IRONCLAD", "PORMAX", *Reg. T.M. U.S. Pat. Off.*

Battery



THESE FEATURES CONTRIBUTE TO THE HIGHER CAPACITY AND LONGER LIFE OF THE T-H BATTERY

LARGER POSITIVE PLATES
of exclusive Exide-Ironclad slotted tube construction.

POSITIVE PLATE SPINES
cast with the heavy top cross bars, are of SILVIUM, which resists corrosion — contributing to longer battery life.

SLOTTED PLASTIC TUBES
of non-oxidizing polyethylene—retain active material in contact with spines, yet permit the electrolyte to penetrate throughout the active material.

POLYETHYLENE TUBE SEALER
This acid-proof plastic sealer fits snugly into the bottom of positive plate tubes, sealing in the active material for a longer working life.

EXTRA HEAVY NEGATIVE PLATES
to balance the new positive plates.

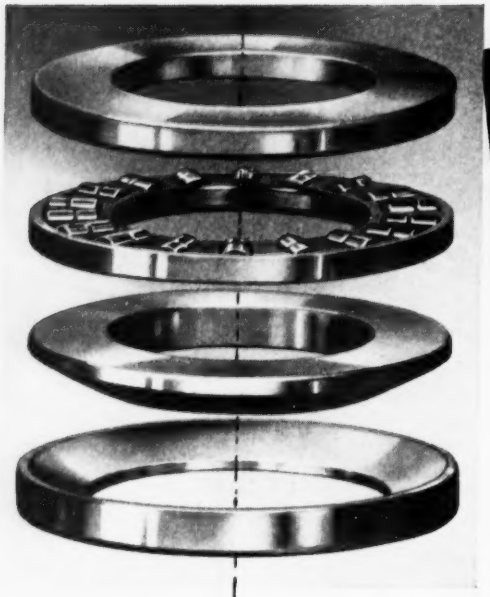
PORMAX SEPARATORS
Practically indestructible. Decrease internal resistance, thus assuring quick starting and rapid acceleration, plus lower operating costs.

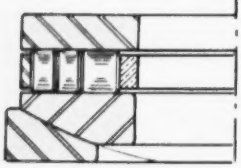
CORROSION-RESISTANT TRAY GUARD
A plastic, acid-resistant steel tray coating, with high insulating qualities and the ability to withstand hard knocks.

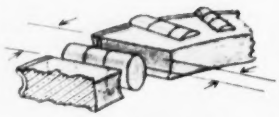
NEW QUARTER TURN PLASTIC VENT PLUGS
Made of unbreakable polyethylene. Can be quickly and easily removed to add water.

HOMOGENEOUS SEALING COMPOUND
resists shock, without cracking, at high or low temperatures. Forms a permanent seal between jar and cover.

MOLDED SEAMLESS SHOCK-PROOF JAR
High quality rubber. Sturdy . . . built for a long life of heavy duty service.







PARALLELISM

ACCURATE PARALLELISM between the rollers and the matched thrust plates is repeated in the parallelism between the separator slots and the rollers themselves—all adding up to quietness, equalized wear and longer life.

THRUST RADIAL

RIGHT ANGLE
Roller Ends, precisely square to avoid end-rub, oscillation and side-shock.

- **RIGHT ANGLE**
Bearing Surfaces with parallelism that results in unwavering right-line rolling.

- **RIGHT ANGLE**
Separator Slots accurately machined to prevent roller skew, slide and uneven wear.

Held to extremely close limits of parallelism, every roller—every race—every thrust plate in a Rollway Bearing is an engineering masterpiece of matched precision and right-angle trueness. As a result, friction losses are low—load capacity and service life high.

Rollway Radial and Thrust Bearings offer the widest selection in types and sizes, available for quick replacement through authorized distributors. Consult your classified phone directory under BEARINGS.

Our engineers are available without cost or obligation to assist you in selecting the correct Rollway Bearing for your needs. Call your nearest Rollway sales office.

SALES OFFICES

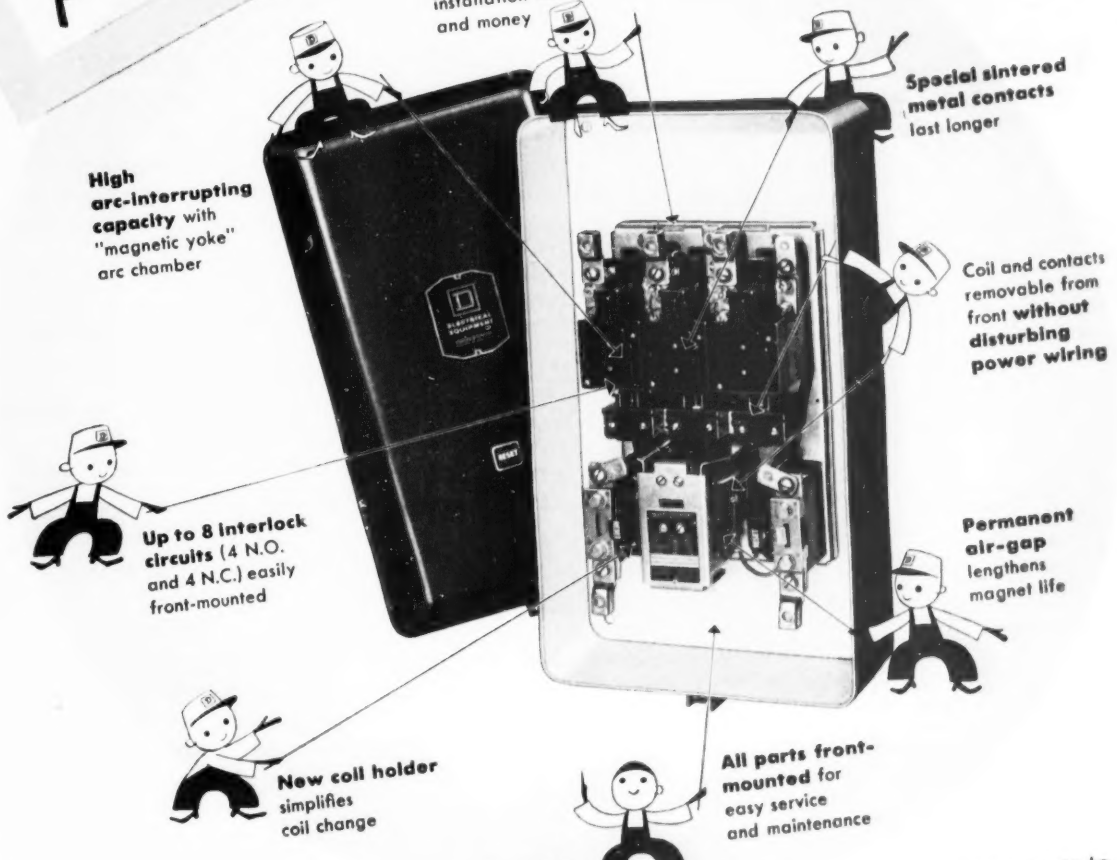
Syracuse	Houston
Cleveland	Chicago
Detroit	Philadelphia
Boston	Toronto
Pittsburgh	Los Angeles

ROLLWAY BEARINGS

Complete Line of Radial and Thrust Cylindrical Roller Bearings

NEW Square D Size 4 Starter

Feature-packed!



"Hook-on" base design saves installation time and money

Special sintered metal contacts last longer

High arc-interrupting capacity with "magnetic yoke" arc chamber

Coil and contacts removable from front **without disturbing power wiring**

Up to 8 interlock circuits (4 N.O. and 4 N.C.) easily front-mounted

Permanent air-gap lengthens magnet life

New coil holder simplifies coil change

All parts front-mounted for easy service and maintenance

The highest degree of accessibility, flexibility and compactness—with no sacrifice of performance and long life. That's Square D balanced design—and you'll find it in every size Square D starter.

"Off-the-Shelf" Parts Kits, another Square D convenience feature, make normal maintenance easier than ever. Each kit contains parts to replace all load contacts and finger springs. Electrical interlocks also available in kit form.

***Write** for Bulletin 8536, Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin*

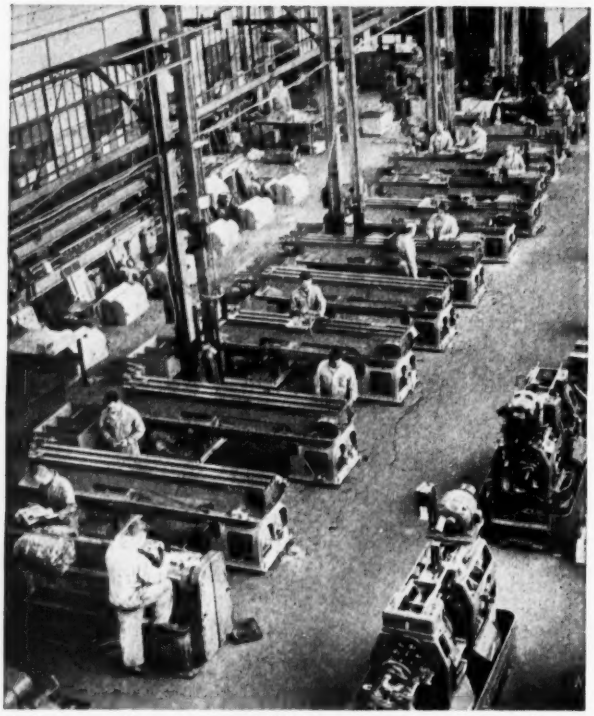
ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

1903 • **50** YEARS OF DESIGN LEADERSHIP • 1953

Engineered Rebuilding

How Simmons Methods Increase Machine Tool Output and Efficiency



A battery of the Pratt and Whitney deep-hole drillers in the process of adaptation for the use of speedier carbide tooling. In the right foreground are a few of the many semi-automatic screw machines reactivated by Simmons.

These ovens are used for gears, lead screws and all other parts that require heat treating. Hard-to-get parts are often made at the Simmons plant, heat-treated, then finish-ground.

Deep-hole drillers adapted for carbide tooling

Unlike many of the 400 Government machine tools which Simmons has reconditioned, these Pratt and Whitney deep-hole drillers required extensive modernization: they had to be redesigned for the use of carbide tooling. Here's how it was done:

- **Speed raised from 1500 to 3000 rpm**
- **Cooling system pressure and rate of flow increased**
- **Heavier electrical motors and wiring installed**
- **New bearings, gear boxes and gears to accommodate the higher speeds**
- **Numerous other changes for faster carbide tooling**

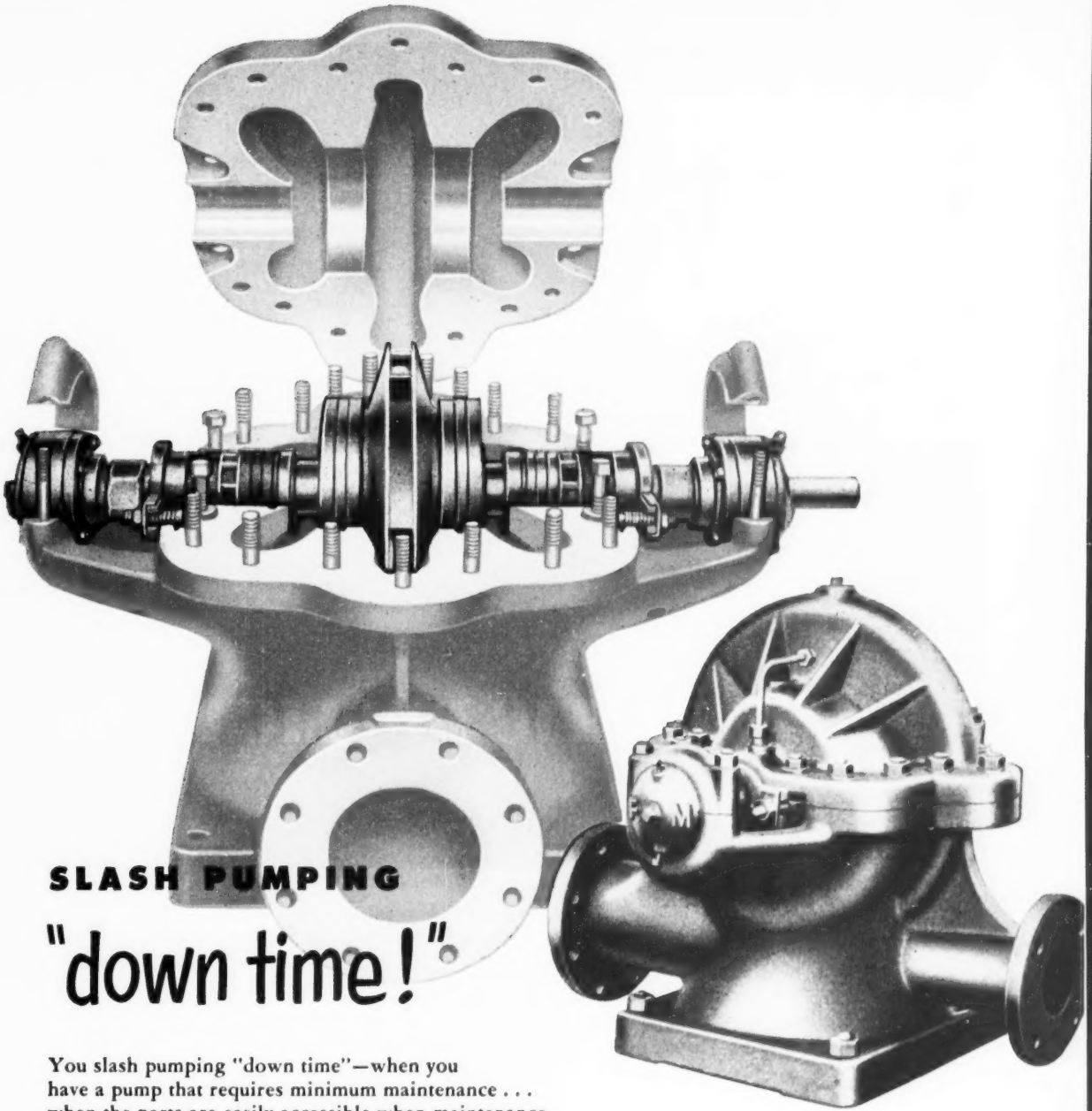
In addition to adapting the lathes for carbide tooling, Simmons completely dismantled them, cleaned them, replaced worn parts, and refinished all of the sliding surfaces.

No sacrifice of civilian work was necessary. For Simmons has facilities (120,000 sq. ft. plant) to handle large Government programs such as this and *still* maintain early delivery schedules on its program of *Engineered Rebuilding* for industry.

Will rebuilding work for you? It's easy to find out: simply send a list of your machines that might be rebuilt for extra capacity, renewed accuracy. We'll quote prices and delivery. Meanwhile, write for a copy of our quarterly, THE SIMMONS WAY.

SIMMONS MACHINE TOOL CORPORATION
1755 North Broadway, Albany 1, N. Y.
New York Office: 50 E. 42nd St.
Philadelphia Office: VIctor 8-3133
Pittsburgh Office: PEnhurst 1-3700

SIMMONS GIVES USED MACHINE TOOLS A NEW LEASE ON LIFE



SLASH PUMPING "down time!"

You slash pumping "down time"—when you have a pump that requires minimum maintenance . . . when the parts are easily accessible when maintenance is necessary . . . when you have a Fairbanks-Morse Split-Case Centrifugal Pump!

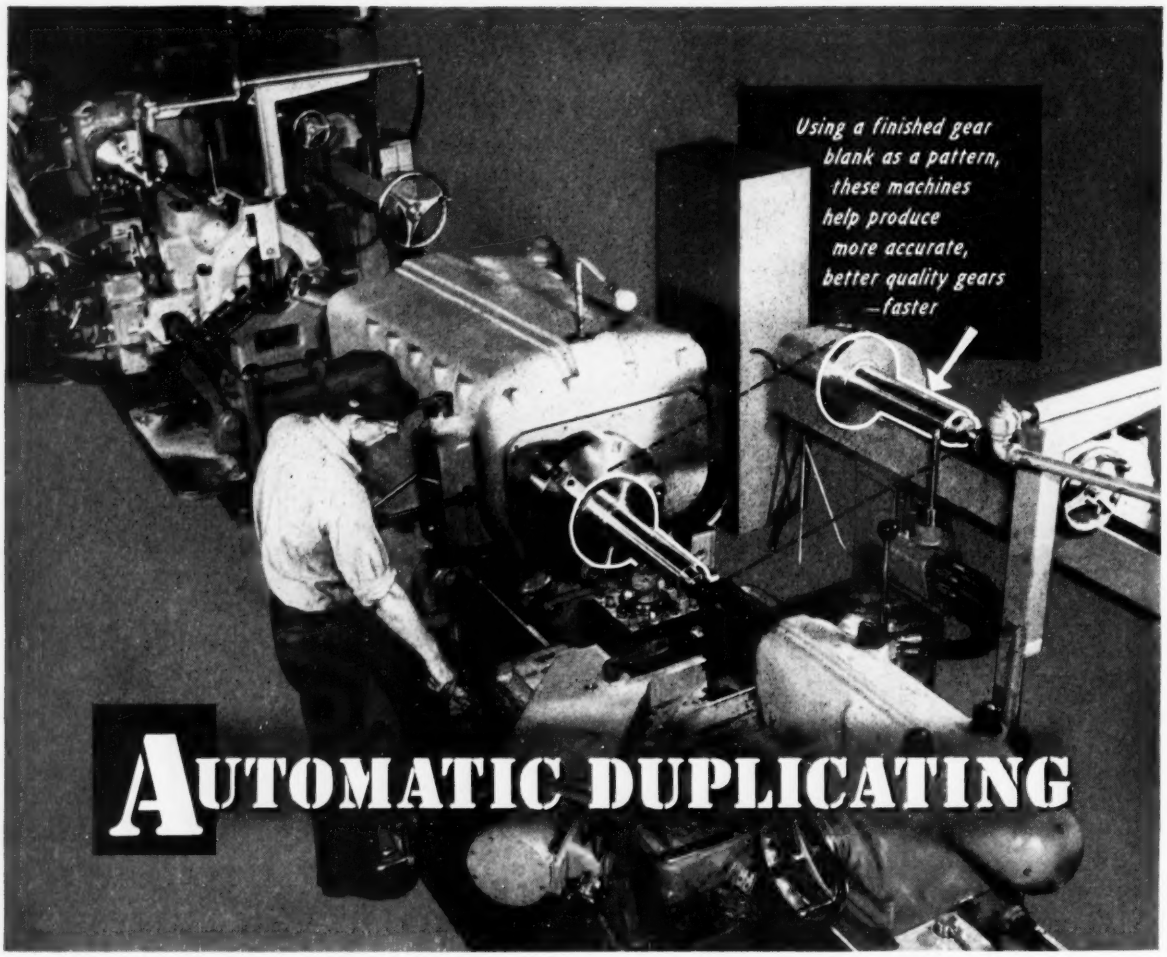
See how easily this sturdy pump is inspected . . . lift the split casing and the entire rotating element can be removed without disturbing driver or pipe connections . . . even the bearings can be removed without use of a bearing puller!

See your Fairbanks-Morse Branch Pump Engineer on this Split-Case Single-Stage Centrifugal and the rest of his complete pump line. Fairbanks, Morse & Co., Chicago 5, Illinois.

FAIRBANKS-MORSE

a name worth remembering when you want the best

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY
RAIL CARS • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS



AUTOMATIC DUPLICATING

AUTOMATIC DUPLICATING of gear blanks in our shops, illustrated above, is faster and more accurate. And it indicates the advancements in modern gear manufacturing.

- Today quality gear manufacturing requires new machines and techniques plus experience and skill acquired making every conceivable type of gear, assembly, reducer, and transmission over a long period of time.
- It is this combination which BRAD FOOTE offers you to help solve the problems you may have. From our creation of the original drawing of the gears or assemblies you need, through every step of manufacture in our own shops, a series of controls guarantees quality. No one shares our responsibility.
- Whether your requirements call for only one standard or specially engineered gear, gearmotor, reducer, or transmission—or an unlimited quantity—you'll find BRAD FOOTE service to your liking.

Your inquiries will receive prompt attention.

BRAD FOOTE GEAR WORKS, INC.

1309 South Cicero Avenue • Cicero 50, Illinois
BIshop 2-1070 • OLympic 2-7700

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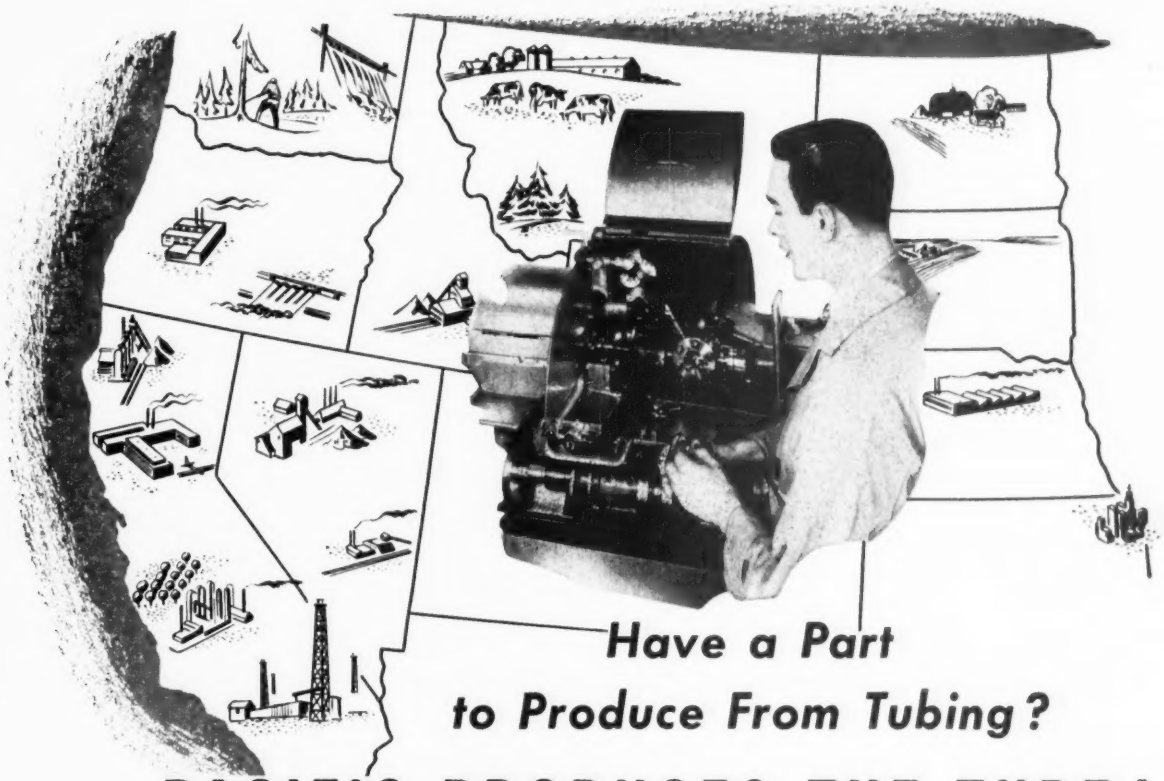
AMERICAN GEAR & MFG. CO.
Phone: Lemont 920
Lemont, Illinois

PITTSBURGH GEAR COMPANY
Phone: ATlantic 1-9950
Pittsburgh 22, Pennsylvania



Have a Part to Produce From Tubing?

PACIFIC PRODUCES THE TUBE!

Sizes and Analyses

TUBING

SEAMLESS CARBON
MT—1015, 1020, 1025
Round: 3/16" to 2 3/4" O.D.
Square: 1/4" to 2" O.D.

SEAMLESS ALLOY
4130—NE 8630
Round: 3/16" O.D. to 3 3/4" O.D.
Square: 1/4" to 2" O.D.

CHROME
4%-6%, 6%-8%, 8%-10%
3/16" to 1 7/8" O.D.

STAINLESS STEEL
Seamless and Welded
Types 304, 316, 321, 347.
Round: 1/4" to 2 7/8" O.D.
Square: 1/4" to 1 7/8" O.D.

WELDED CARBON TUBING
3/4" to 3" O.D.

BARS

C-1018, B1113
COLD FINISHED
1/8" to 2 1/2"
For Other Shapes, Contact Mill.

If you are fabricating tubing into finished parts . . . manufacturing small parts that require piercing before forming or machining . . . if your process or product requires a conductor for fluids, or strong, light-weight structural parts . . . you can profit by calling Pacific Tube Company. We can serve you quickly and economically.

Pacific has the modern tube mill and the facilities for the *quality* production of tubes, rods and bars in a wide range of sizes and analyses. All of Pacific's production is drawn and finished to suit the most exacting specifications for dimension, analysis and finish. In addition, we may be able to help you solve tubing problems with assistance in metallurgy, engineering or design.

Get more information about Pacific Tube Company products and service today. Clip and mail the coupon for our newest Tubing Bulletin or to have a representative call. No obligation, of course.

West Coast Distributors for:

Superior Tube Company, manufacturers of fine small tubing in all analyses from .010" to 5/8" O.D. and in certain analyses (.035" max. wall) up to 1 3/8" O.D.

YOU CAN'T BEAT PATCO FOR TUBING

PACIFIC TUBE COMPANY

First Steel Tube Mill in the West

PACIFIC TUBE COMPANY
5702 Smithway Street
Los Angeles 22, Calif.

Gentlemen:

☐ Please rush me your new Tubing Bulletin.
☐ Have your representative call.

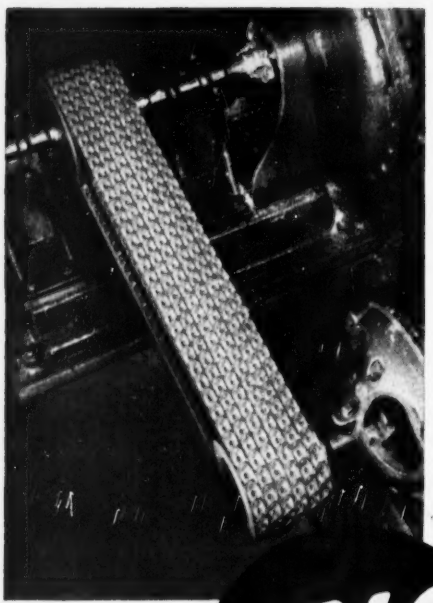
NAME_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

"Yes, but what will it do for me?"



We'll answer your question by giving you a run-down of what we call the three "E's" of Veelos, the adjustable v-belt . . .

Ease of Installation—the link construction of Veelos makes it easy to install without re-setting the motor or tearing down outboard bearings. In many cases installation is completed in 50% to 90% *less time* than it would take to make an endless v-belt installation.

Efficiency of Operation—because individual Veelos v-belts can be adjusted for correct tension, matched sets can be kept matched; vibrationless, full power delivery is assured.

Economy of Inventory—just 4 reels of Veelos in the 0, A, B and C widths can replace up to 316 different sizes of endless v-belts. Of course, if your machines use only one or two widths of v-belt, you stock only those widths of Veelos. Inventory is simplified, costly belt deterioration is eliminated and you save valuable stockroom storage space.

Put these three "E's" of Veelos to the test in your plant, under your own operating conditions, and you'll find the answer to your question . . . standardize on Veelos and *save!*

VEELOS
THE LINK
V-BELT

VEELOS DATA BOOK—Here's the complete story on Veelos, the adjustable v-belt. Book gives detailed engineering data, is fully illustrated. Write for your copy today!

MANHEIM MANUFACTURING & BELTING COMPANY
613 Manbel Street, Manheim, Penna.

ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

Unequaled-anywhere!

IT ALL COMES DOWN to one fact... that Roebling high carbon flat spring steel is absolutely unequaled for cutting down preparation time, machine stoppages and rejects. What's more, it's made as you want it... annealed, hard rolled untempered; scaleless tempered; tempered and polished, blued or strawed.

You *pay* for the best every time you buy flat spring steel. Make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

California giant Sequoias—largest of all trees.

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Every Major Jet Engine Manufacturer* uses "AMERICAN WELDED" Component Parts

Rings, turbine casings, assemblies — or other circular welded components — if your requirements call for either fusion or resistance welding of ferrous or non-ferrous metals, our Product Development Division can help you. American Welding provides designing, engineering, metallurgical and machining facilities. Give our local representative a call — or write direct — we will be glad to study your problem.

*United States

THE AMERICAN WELDING & MANUFACTURING COMPANY

110 DIETZ ROAD • WARREN, OHIO

June 8, 1953

A 6-Cent Minimum

Six cents was the minimum figure United Steelworkers President David McDonald had in mind last week as he resumed negotiations with U.S. Steel Corp. That's because 6 cents was the wage gain won for the autoworkers by Mr. McDonald's rival, Mr. Reuther. Autoworkers were due an "annual improvement" boost of four cents an hour. That was lifted to 5 cents. The cost of living adds another penny to pay, so autoworkers start this month getting 6 cents an hour more than they got last June. That's not counting the more liberal pension payments of $137.50 which the Big Three have all agreed to and which the independents are also beginning to promise.

More Steel in Michigan?

Michigan Economic Development Commission late this summer will release details about proposals for increased steel capacity in the Detroit area. Auto builders are primarily concerned because for the Big Three alone more than 61 per cent of their postwar expansion has been in Michigan. Some 2.5 times as much steel is consumed in the state as is produced there. Over the years, a lot of such steel expansion ideas have been advanced, but few have come to much. This time could be different because automakers might put up some cash. General Motors, anyhow, set a precedent for such action when last month it agreed to lend $25 million, to be repaid mostly in steel, to McLouth Steel Corp. to help finance a $105 million expansion at Trenton, Mich.

Deadlock on Excess Profits Tax

A deadlock is developing over the excess profits tax. Businessmen want it to die its natural death June 30. The White House wants it extended to Jan. 1 and Congressmen now don't know what they want. A compromise that looks promising: Extend EPT to Sept. 30, 1953, and advance personal income tax reductions to that date.

Economic Sense

Tax compromise makes sense politically and it could make sense economically, too. By September the administration should have a clearer idea of how much it wants to cut defense spending. The dampening effect on the economy of defense cuts at that time would be offset by the tax cuts' favorable effect on business.

Don't Let It Worry You

"Eventually we may run out of metals, but don't let it worry you. Our mineral resources are virtually inexhaustible." So says Felix E. Wormser, assistant secretary of the Interior and business executive. He points to uranium as an example of how adequate reserves can be found, provided the incentive is right. If we run out of one thing, he believes that technology will always come to the rescue with something to substitute for it or we'll find new supplies.

Shipbuilding Doldrums?

There's no new major shipbuilding in sight for American yards. The Senate last week dealt a blow to builders' prospects by refusing a

Production-Engineering News—p. 89 The Market Outlook—p. 125

request for $3 million in cash and authorization for $40 million to cover the government's share of the cost of building four passenger ships which could be converted to troop carriers. The Senate also turned down aid to convert American-Hawaiian Line vessels into iron ore carriers.

Watch Debt and Inventories

The staggering consumer debt of $26.7 billion is being watched more closely by many economists for signs of decline which would indicate a drop in demand for consumer durables. But the first real drop in demand will probably come three or four months before it shows up in the debt figures. That's because it takes about that long before debt repayments materially reduce the credit total. Watch inventories, in conjunction with credit, for your clue to declines, if any.

Interest Rates and Expansion

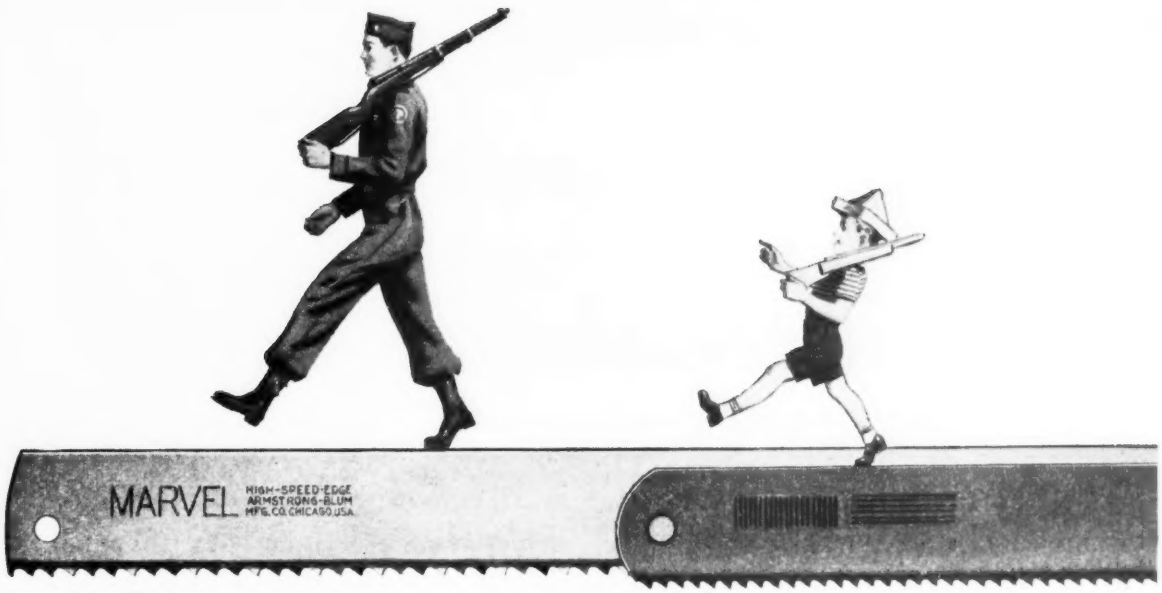
Are higher interest rates curtailing metalworking expansion? A little, but not much, is the consensus among bankers interviewed by STEEL. Sharper cuts because of high interest rates have come in utility and gas line expansions. Metalworking is not markedly affected because the bulk of its expansion has already been started or committed. But what probably will be curtailed are those plans still floating around in the executives' heads.

Straws in the Wind

General Motors' Cleveland-Cadillac tank plant will manufacture final drive assemblies for the M-48 medium tank, the units to be shipped to Grand Blanc, Mich., for assembly at the Fisher Body plant . . . A one-year extension of the Reciprocal Trade Act is a virtual certainty . . . The Hazel Blast furnace, second of two Fairless Works stacks, was blown in June 3 . . . Kaiser Steel Corp. dedicated its third blast furnace June 2, which brings the total rated capacity of the plant to 1,314,000 tons of pig iron annually.

What Industry Is Doing

Steelmakers—already in an era of low profit margins and entering an era of extra capacity—fear disastrous price-wars may loom ahead (p. 47) . . . Pittsburgh Steel Co. completes a $9 million open-hearth expansion at Monessen, Pa., which will increase the company's annual capacity by 48 per cent (p. 48) . . . More manufacturers and warehouses are installing shearing and slitting equipment in an effort to trim costs (p. 49) . . . Vacation shutdowns are gaining in popularity (p. 50) . . . Industrial application of electronics, now at about $500 million a year, is still on the upswing (p. 50) . . . Gearmakers' total volume in 1953 will be at least as good as in 1952 is predicted at the American Gear Manufacturers Association's annual meeting (p. 52) . . . Office work is undergoing a revolution as many businesses find it pays to use electronic and automation equipment (p. 58) . . . Production of storage batteries may rise 7.5 per cent this year, bringing more sales to lead producers (p. 59).



. . . *but*
Experience Cannot be Copied

More than a quarter-century ago MARVEL invented and basically patented the MARVEL High-Speed-Edge Hack Saw Blade—the UNBREAKABLE blade that increased hack sawing efficiency many-fold.

Every MARVEL Hack Saw Blade ever sold has been of that basic welded high-speed-edge construction, with constant improvements from year to year, as EXPERIENCE augmented the "know-how" . . .

MARVEL is not "tied" to any single source of steel supply, and has always used the best high speed steels that became available from time to time as metallurgy progressed. When-as-and-if finer steels are developed—and are proven commercially practical for welded-edge hack saw blades—MARVEL will use them, regardless of cost or source . . .

There is only one genuine MARVEL High-Speed-Edge! All other "composite" or "welded-edge" hack saw blades are merely flattering attempts to imitate — without the "know-how" of MARVEL EXPERIENCE . . .

Insist upon *genuine* MARVEL High-Speed-Edge when buying hack saw blades—and be SAFE, for you can depend upon MARVEL. They have been "tested", "pre-tested", and "re-tested" by thousands of users for more than a quarter-century!

MARVEL *Metal Cutting* SAWS

Better Machines-Better Blades

ARMSTRONG-BLUM MFG. CO. · 5700 Bloomingdale Ave. · Chicago 39, U. S. A.

Imagine buying Sheet and Strip the way you do nuts and bolts!

Imagine a "Jack-of-all-jobs" sheet and strip steel . . . good for any stamped or roll-formed product you make.

You could buy your sheet and strip the way you do nuts and bolts. And what a cinch for us . . . just to pick the right gauge and size . . . and ship!

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Candid Report

Last Wednesday evening millions of Americans heard or viewed a program from Washington that is destined to make history. President Eisenhower, with the assistance of Secretary of the Treasury Humphrey, Attorney General Brownell, Secretary of Agriculture Benson and Secretary of Welfare Mrs. Hobby, discussed informally over radio and television a number of problems of current interest to all thoughtful citizens. It has been hinted by White House spokesmen that this type of report to the people will be repeated at suitable intervals.

There are skeptics who will say that the Eisenhower technique is simply an imitation of Franklin D. Roosevelt's famous "fireside" radio chats. This is true only to a limited extent. F.D.R. was primarily engaged in exploiting his own charming personality. His was a one-man show. The big difference is that in his programs, President Eisenhower invites members of his cabinet to express their opinions. His objective is to build up public confidence in the ability of his expert and balanced team of advisers.

There is precedent for this policy. In 1921 when Herbert Hoover was appointed Secretary of Commerce, he invited business paper editors to Washington about every three months for a conference with the chiefs of bureaus in his department. In 1929, when he became President, the editors were invited to conferences at which President Hoover and some of his cabinet members answered questions freely and candidly. The result was that business paper editors acquired considerable background information that proved to be invaluable in interpreting government policy and action.

The Eisenhower decision to go direct to the man in the street via radio and television to discuss current problems is making available to millions of people the special service which Mr. Hoover several decades ago rendered to a few score editors.

With the tremendous improvement in communications in recent years, President Eisenhower now has an opportunity to explain government problems to the people more effectively than could any of his predecessors. If he and his advisers can continue to clarify government problems as they did last Wednesday, the result will be a public understanding of untold value and benefit.

E. L. Shaner

EDITOR-IN-CHIEF

UNEXPECTED STRENGTH: Gear manufacturers late last year were expecting a substantial decline in bookings for 1953. They figured tooling for the military program was nearing completion and that civilian buying would not be sufficient to maintain volume at the 1952 levels. Now they report (p.52) that 1953 volume will be at least as good as 1952.

They are surprised by the unexpected strength in demand.

The same story pops up again and again in metalworking. Early this year, steelmakers expected a balance between supply and demand would be reached in May or June. As the mid-year approaches, steelmaking operations continue at capacity levels and most steel products continue in short supply. The date for the expected balance in supply and demand is moving back to the third or possibly fourth quarter.

So many examples of realizations exceeding expectations can be cited since the end of World War II, that the moral may well be: Don't sell the economy short.

* * *

MORE MASS VACATIONS: Several surveys of the vacation policies of manufacturing plants indicate that the plan of shutting down a plant completely for mass vacations seems to be growing in favor. A study in one industrial area (p.50) showed that 48 per cent of the companies polled will shut down completely for vacations this year, compared with 37 per cent a year ago. This is a substantial increase.

Of course, many plants in the metalworking industry will continue to stagger vacations in the orthodox manner. Each vacation policy has its advantages and disadvantages and it is the responsibility of management to decide which is best for the conditions existing in its plant.

Now that more liberal vacation policies are the rule rather than the exception, it is almost a foregone conclusion that henceforth vacations will present more problems for management than ever before.

* * *

CLERICAL REVOLUTION: One out of eight in the work force is a clerical person today, making up a national office staff of some 8 million. That's 30 times as many office workers as were employed in 1873, when the first business machine, the typewriter, was introduced. Manufacturing employment now is only seven times the 2.1 million employed in all industries about 1870.

Until recently, then, technical developments in handling paperwork have not matched the changes occurring since the 1870s in manufacturing techniques. But all that's being remedied now—by an office equipment manufacturing industry which turned out $1.3 billion worth of apparatus in 1952 and expects to do even better in 1953 (p. 58). Today's business forms and modern equipment for dictating, typing, duplicating and addressing do a job now that would have taken 20 to 30 times as many people only a short time ago. That's just a start, however; indications are that the clerical revolution is just beginning.

* * *

OPTIMISM IN AUTOS: Dealer stocks of automobiles are rising. All the gimmicks in the book are being employed to move cars out of the used car lots. And, individuals are finding auto loans a trifle harder to get.

Yet, automobile assembly plants are breezing merrily along to what looks like second highest production year on record (p. 61). Major companies even are willing to lay out extra cash for conversion steel to make certain there is no severe slow-down. Major styling changes are being shelved until 1955 and 1956.

The optimism in autos is refreshing, especially in a period when too many people are inclined to "talk" recession or depression.

* * *

COMING OF AGE: Compared to other metal-joining methods, welding is still pretty much the infant. But what a healthy, growing infant it is! Since welding moved out of the blacksmith's shop to become a production tool, this country—and the world—have enjoyed the greatest period of technological advancement. New developments and techniques are still to be explored. Resistance presswelding (p. 92) is the volume producer in the automotive field, but its versatility and high output remain essentially untried in other industries. Pressure welding (p. 90), new comer in the ranks, looks like the answer to many of the joining problems of ductile nonferrous metals. These are but two of many developments.

Measure of the industry's growth is the impending Welding & Allied Industries Exposition set for June 16-19 in Houston. This will mark the first time the American Welding Society has sponsored its own major technical meeting and exhibition. A sure sign of maturity of the society and the industry.

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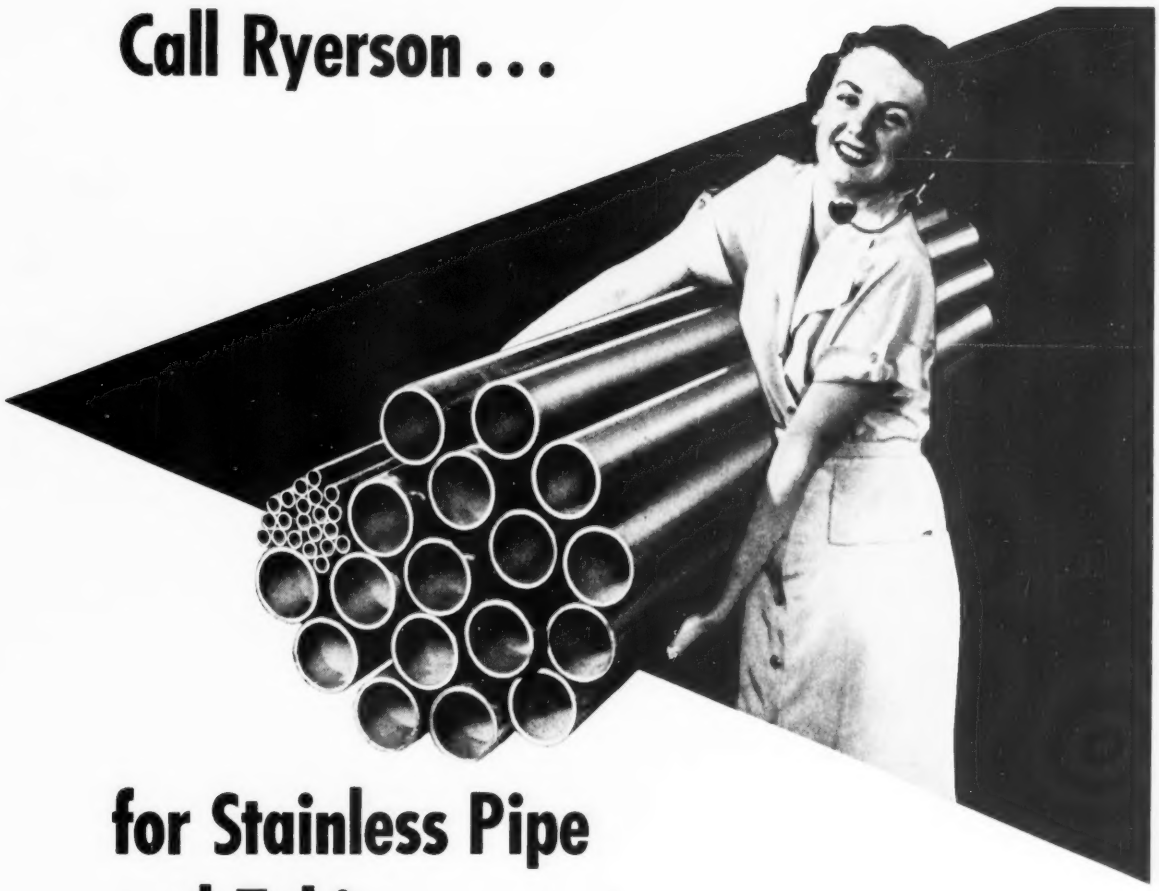

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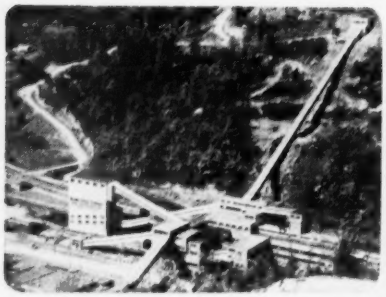

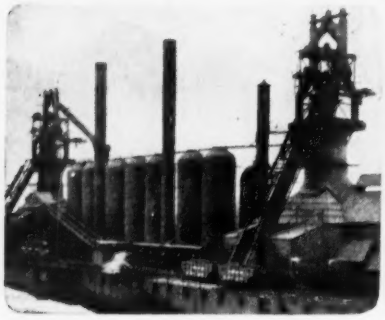

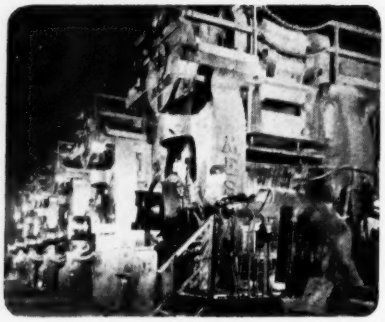

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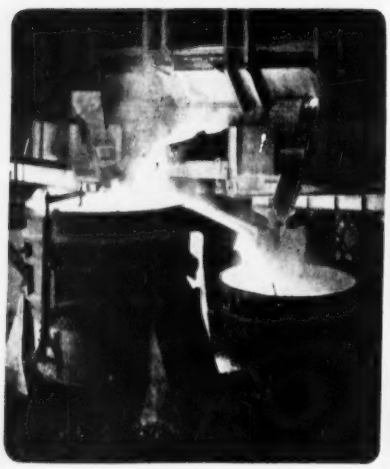
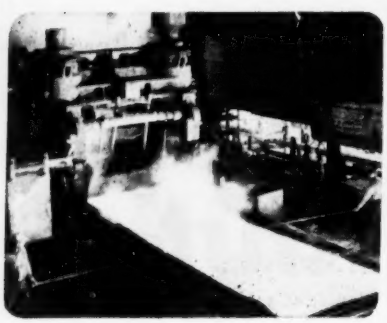
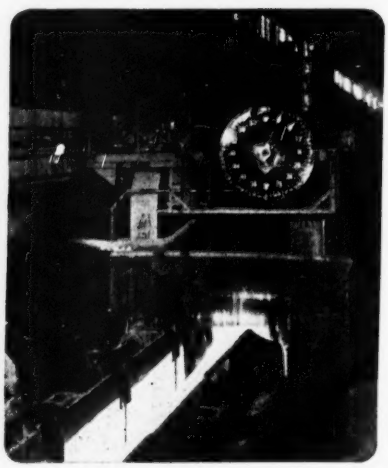
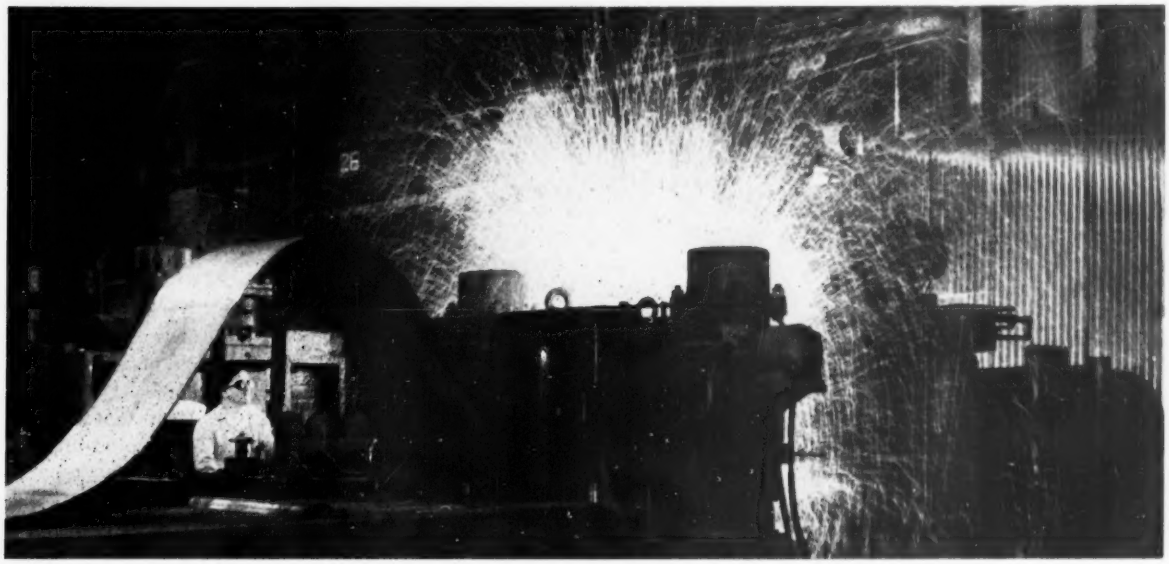








Will declining steel profit margins and low demand in the future spark . . .

Price-War Fireworks in Steel? Preventives Sought

STEELMAKERS are concerned that a chain reaction in their industry might result in dangerous pyrotechnics.

Most agree that preventive measures should be prepared now to forestall any possible future difficulties.

The Situation—The problem is basically this: The steel industry's profit margin has narrowed steadily in the postwar years despite the high operations. We are entering an era when we will probably have excess capacity. If history repeats that of the 1930s, we could see a period of inside price deals and eventual full-scale price war as basic producers vie for the scarce business. That would mean even lower profit margins and ultimate financial collapse. Complicating the matter is the current wage negotiations which look like they'll finally result in some pay increases.

Every 5-cent-an-hour wage boost means an approximate increase in cost equal to about $2 a ton. A base price boost of, say, $4 just to cover increased costs of a wage hike would be accepted now, but only grudgingly by steel consumers already paying new extra charges that average about $3 a ton more than formerly.

Competition—It may not be accepted at all by some consumers. Aluminum is making inroads into steel sales in selected applications, as are plastics. When demand goes down for steel, as U. S. Steel Corp. Chairman Ben Fairless predicts will happen by the end of 1954 at least, big consumers will apply pressure on steel producers for special price consideration. That pressure could prove irresistible to some companies anxious to keep busy.

What that would mean in reduced profits could result in bankruptcy for the industry and eventual socialization of the basic producers. Earnings already are dropping. In 1950 the steel companies retained 7.99 cents as profit per dollar of sales; in 1951, 5.71 cents; and in 1952, 4.91 cents.

Policy Statement—Mr. Fairless' speech before the American Iron & Steel Institute was a bid to apply preventive measures so that steelworkers, customers and stockholders all will remain reasonably satisfied. That the off-the-cuff talk mirrors the opinion of most steelmen and thus has the quality of a basic statement of policy is attested to by its acceptance. Inland Steel Co. Chairman Clarence B. Randall said, "I think Mr. Fairless demonstrated industrial leadership of the highest sort." Howard V. Clark, sales vice president for Detroit Steel Corp., said, "It's the best speech I've heard in 15 years at institute meetings."

In the talk, Mr. Fairless argued there was no economic justification for wage raises. He implied that steel prices would have to go up with pay boosts because already "prices are too low relative to costs." He stated that U.S. Steel would price honestly on the basis of cost accounting. But if in the future price cutting does start, the corporation would meet competitive prices, not just for a single case but for everybody.

Warning—With that declaration, the corporation chairman was in effect talking about the problem of unreasonably low prices that might conceivably be brought about in a future low production period when a willy-nilly price war could develop. Mr. Fairless is really saying to competitors: "Think

twice if you believe you can get away with inside price deals applicable to one situation only."

Actually, the overwhelming majority of steel executives interviewed by STEEL welcomes the policy declaration. Even most steel consumers do, too. William Gillett, executive vice president of Detroit Steel Products Co., says it's a "sound business policy that should be welcomed by producer and consumer alike." A Pittsburgh purchasing agent echoed sentiment among many buyers by saying, "I hope the one-price declaration sticks because I dread returning to the jungle of the 1930s when you fought to beat down the price ¼ cent on a deal, only to discover after it was too late that your competitor succeeded in bludgeoning a ½-cent special dispensation."

Doubt—But even some consumers that like the policy expressed doubts that it could stand up under the pressure of poor times. "Some big consumers will try to swing their weight when ingot operating rates are down," says a Chicago appliancemaker. "They might not try it seriously on any of the big producers, but they will on smaller mills." But the consensus among consumers is that the stand taken by U.S. Steel—and by other major producers—minimizes the danger of future price wars such as occurred during the 1930s, although normal competitive price swings will still be possible.

Thus, steel market analysts believe the one-price policy has a better than even chance of achieving a balance — precarious but workable — that will prevent a worker-customer-stockholder chain reaction from getting out of hand.

New Arbitrator Named

CIO President Walter P. Reuther appointed Dr. Nathan P. Feinsinger to the post of organizational disputes arbitrator upon the resignation of Dr. George W. Taylor. Dr. Taylor had accepted the post for a limited period.

Dr. Feinsinger was chairman of the Wage Stabilization Board in 1951 and 1952. His post was created at CIO's 1951 convention and designed to prevent jurisdictional conflicts between CIO unions. Decisions of the arbitrator are final and binding on disputing parties.

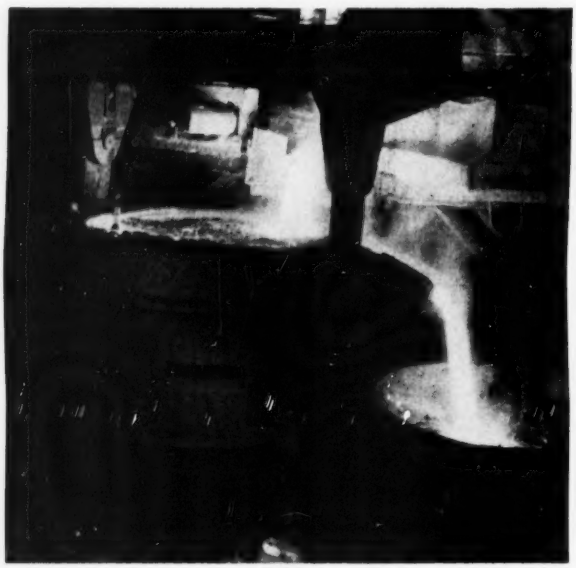
Mr. Reuther says that under Dr. Taylor the plan of referring decisions to an arbitrator encouraged a fraternal attitude that made recourse to arbitration machinery unnecessary in the majority of cases.

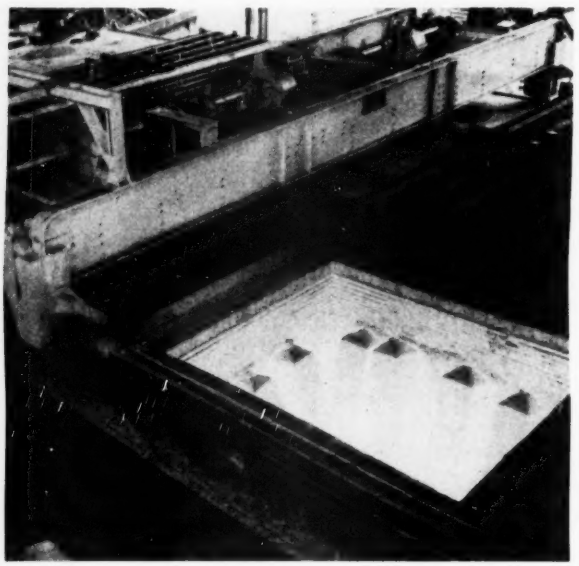
Weirton Coal Mine Closed

National Steel Corp. will close its Weirton coal mine near Morgantown, W. Va., on June 27 for an indefinite period. The mine, one of the most modernly equipped, has been producing high-grade metallurgical coal for use in National's steelmaking operations.

When put into operation in 1950, the Weirton was estimated to have a life expectancy of 40 years and an annual capacity of 1.5 million tons a year. While National declined to say exactly why the mine is being closed, conjecture is that unexpectedly difficult geological conditions make it inadvisable to continue operations.

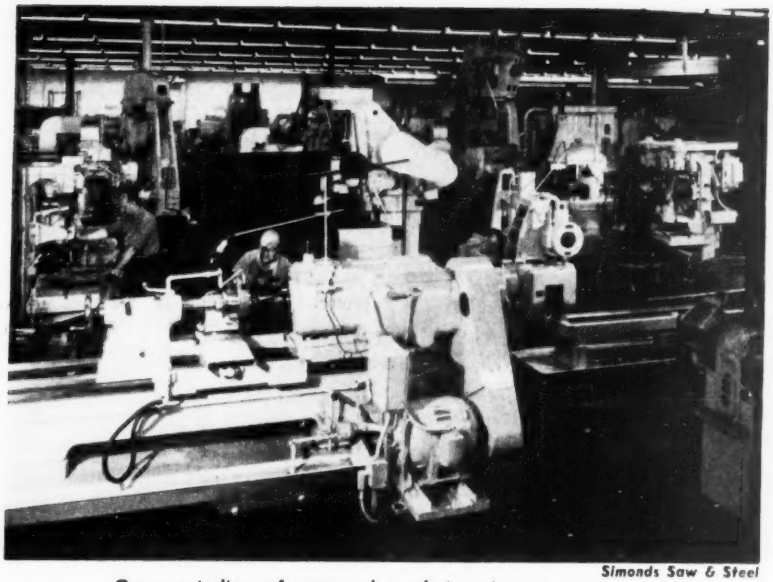
National has its main coal mine at Isabella, Pa., a one-third interest in Mathies Coal Co., and a 40 per cent interest in another coal company.





Pittsburgh Steel Co. Completes a $9-million Open-Hearth Expansion

Signs of expansion at Monessen, Pa., works of the Pittsburgh Steel Co. are the new 250-ton ladle, left, and soaking pit, right. Enlarged facilities advancing the company from 14th to 11th ranking steel producer include 12 open hearths increased to 250-ton capacity, 18 ladles holding 250-tons, three new ladle cranes and five blocks of soaking pits, increasing steelmaking capacity from 1,072,000 to 1,560,000 net tons annually. The open-hearth expansion is part of a $628-million over-all expansion begun in 1950 and scheduled for completion soon



Simonds Saw & Steel

Gang grinding of rotary shear knives insures accuracy

Shearing and Slitting: Cut It Yourself

Trend for manufacturers and warehouses to buy their own shearing and slitting equipment continues. It's cheaper, requires less inventory and may avert shutdowns

CUT UPS among metalworking manufacturers and steel warehouses have the edge on their competitors these days.

Shearing and slitting knifemakers say the postwar trend toward more in-plant resquaring and slitting continues strong because it's one way to economize.

As You Need It—That's not the only reason why more manufacturers and warehouses are installing their own shearing and slitting equipment, however. Smaller inventories are required when you own your own slitter. A coil of wider strip can be cut down to the optimum size for use as it's needed.

There's a better chance of getting the wider coils, too. Mills are pushing hard for tonnage and it's much faster to roll wide coil than trim to the narrower sizes. If you can slit your own, you may be able to avoid a delay in getting the steel.

Hot Coils—The trend toward in-plant shearing and slitting is another war baby. Men in the industry recall the good old days of '45 and '46 when warehouses in Detroit were keeping slitters going continuously without having any stock on hand themselves. It was all job slitting. One of these men remembers seeing a slitter work on a coil which was still hot from the mill.

Though job slitting has decreased since the early postwar days, there's still some being done. More and more manufacturers and warehouses are finding that the equipment is mighty handy to have right in their own plants. A survey made by STEEL revealed about 33.3 per cent of metalworking plants contacted own shearing knives and about 10 per cent have slitting knives. The same survey showed 50 per cent of the warehouses canvassed buy shearing knives (industry men say that's low; should be 60 to 75 per cent) and 15 per cent own slitting knives. Industry men say 75 to 80 per cent of all the warehouses in the country own one or the other kind of knife.

Difference Pays—Buyers of slitting and shearing equipment prefer overwhelmingly to deal directly with the manufacturers of the blades. Primarily that's because the makers of the cutting equipment take special pains to see that you get the right blade for the job you intend to do. Wean Equipment Corp., Cleveland, for example, runs a materials survey in which it finds out how much the material costs buying it in shorter, narrower sizes. Then it runs another cost figure on the way the prospective customer could buy and slit or shear it to particular requirements. The difference pays for the equipment.

Kenneth R. Keska, chief staff engineer at Wean, gives this rule of thumb, which he emphasizes is only a rule of thumb: If you use sheet which is between 12 and 36 inches wide and 2 to 10 feet long and consume 100 tons of it a month, you can pay for shearing and/or slitting equipment in about 13 months.

Important Service — Nearly all knife manufacturers offer regrinding services. That's another point in favor of doing business with the manufacturer directly. W. M. Evarts, Niagara Machine & Tool Works, Buffalo, N. Y., says: "We believe this type of service is increasing because shear users realize that proper knife regrinding requires special equipment and a great deal of experience."

Though innovations are a novelty in this industry, there is experimental work now being done on carbide slitting knives. Results to date: Knives perform beautifully in slitting tin plate, but they have a tendency to crack on heavier gages which have no soft, protective coating.

Magnesium Founders Meet

Improving quality of magnesium castings through statistical control and promoting safety in magnesium foundries were major topics discussed at the annual meeting of the Casting Division of the Magnesium Association.

In the opening paper, M. E. Brooks, Dow Chemical Co., Midland, Mich., emphasized that good housekeeping plays a most important part in safety in magnesium foundries. Fire hazards exist in melting, grinding and buffing.

Statistical quality control in magnesium foundries was discussed by A. J. Kukla, Aluminum Co. of America, Pittsburgh. He pointed out that in many industries manufacturing operations depend heavily on machines, but in foundries much depends on workmen.

VACATION NOTICE
This company will be closed during the annual vacation period from 3 p.m. Friday, June 26 to 7 a.m. Monday, July 13, 1953.
No shipments will be made and no deliveries can be accepted during this period.
Enjoy your vacation!
XYZ METALWORKING CO.

Vacation Shutdown Trend Grows

IT'S A SAFE bet that employers are thinking about vacations as much as employees these days. Plant shutdowns versus staggered vacations pose as big a problem as the mountain cabin versus the seaside cottage.

While there is no overwhelming surge to shut down plants completely for mass vacations the idea has been growing for the past two years and continues to encompass more plants this year.

All Together, Now—A survey of manufacturing plants in the New England area shows: "Most plants will shut down entirely rather than rotate vacations; this is regarded as more satisfactory in the end." The National Association of Purchasing Agents' business survey committee reports: "The vacation production recess is expected to be more prevalent this year . . ." And in a survey taken in the Ohio, western Pennsylvania and West Virginia area, 48 per cent of the companies polled will shut down completely for vacations this year compared with 36.8 per cent a year ago.

National Industrial Conference Board's *Management Record* lists these pros and cons of vacation shutdowns:

Pro—Production is maintained at an even pace; employees are kept at their regular jobs. Many plants find it less costly to stop operations completely than hire, train and maintain replacement personnel. All farewells and welcome backs are concentrated in a short period.

Also, employees can plan their vacations well in advance without fear of having to switch the date later. Repairs can be handily made.

Con—Special orders are an even bigger headache, may be lost altogether. If the plant is running at or near capacity, there is a production loss which cannot be made up. There's the matter of scheduling shipments to customers and shipments from vendors. What to do with employees not entitled to a full vacation is a stickler.

Whichever way metalworking employees get their vacations this year, chances are more will be donning sun glasses and loading the family touring car during the first week in July than at any other time. A secondary exodus to the open road will begin the last week in July or the first week in August. Late July or early August vacations are slowly catching on as disgruntled employees tell of overcrowded vacation paradises in early July.

Try Michigan—Most labor contracts in Detroit have provisions for a "bonus in lieu of a vacation." With business humming in the auto factories, the bonus will probably be the prevalent practice this year.

In metalworking plants, generally, the "pay instead of play" idea is currently running in disfavor. Production under pressure, prevalent during the war years, has given way to the reasoning that employees need the rest and change offered by a vacation. Provisions for three-week vacations for service ranging from 15 to 25 years are cropping up in more labor contracts, too. A Cleveland association estimates the three-week vacation benefit for 15 years' service adds an average ½-cent an hour to costs.

Industry's Valet

Electronics can help you. Manufacturers are told how at conferences in Boston

INDUSTRIAL applications of electronics now amount to $500 million annually, 25 per cent of the total nonmilitary volume.

Nearly 17,000 types of electronic devices are used by more than a dozen industries. These devices can smell, feel, taste, see, hear and measure a myriad of things, an endless list. In many cases they provide senses humans do not have.

Measure Its Future?—At a series of industrial conferences held by the New England Council, Boston, the rapid strides made in this field were highlighted by many speakers. Already electronic equipment provides an improved means for measuring variables, previously done only by mechanical instruments. Present developments and others to follow will bring about the measurement and control of hitherto unmeasurable physical properties.

Automatic machine controls are operated electronically in the machine tool, paper and textile industries. They permit a quick slowdown and transverse speeds on machine tools and regulation of many types of equipment in other industries.

Industrial TV provides checks on multiple operations simultaneously by machine operators from more advantageous positions. Compared with broadcast TV this equipment is smaller in size, with fewer tubes and low power consumption.

Common Sense—Electronic computers find some problems easy to

solve, others difficult or impractical and others so impossible that they are not even considered.

As for their cost an electronic measuring device in a Coast refinery paid for itself in the first month of operation.

Quartz Crystal Base Urged

Radio-Television Manufacturers Association has requested government aid in establishing a production base for the quartz crystal industry. RTMA recommends formation of an industry-government advisory group to co-ordinate plans for overcoming instability created by fluctuation between wartime and peacetime requirements for quartz crystals.

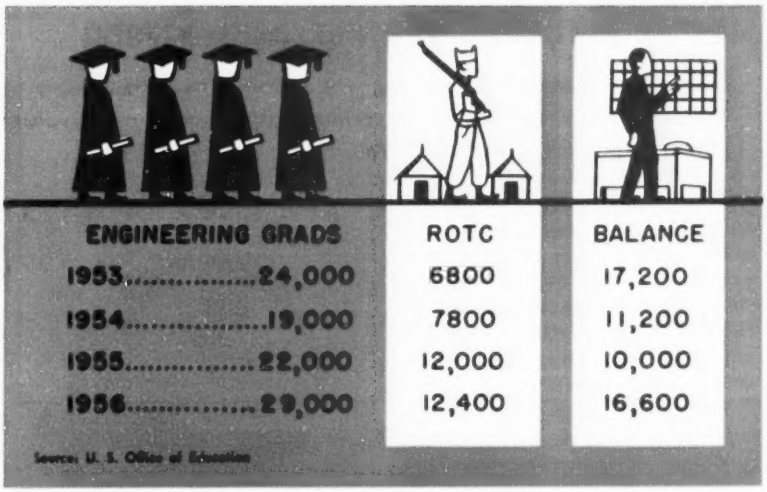
George E. Wright, Bliley Electric Co., chairman of the Piezoelectric Quartz Crystal Section, RTMA, points out that since the normal commercial demand for quartz crystals is only one-tenth of military requirements experienced in 1951 and 1952, production capacity and know-how built up during that time is dependent upon military contracts. Careful placement of military contracts during periods of reduced appropriations, says RTMA, is necessary to avoid waste and the risk of weakening the nucleus of industry needed to form a mobilization base.

Antitrust Indictment Made

A Cleveland grand jury has indicted six corporations and four individuals for allegedly monopolizing the manufacture of railroad car coupling devices.

The indictment charged the group with price fixing, dividing up sales and excluding competitors throughout their market. Business amounted to about $35 million in 1951.

Named in the indictment were: National Malleable & Steel Castings Co., Cleveland, and that firm's vice president, Wilson H. Moriarty; American Steel Foundries, Chicago; Buckeye Steel Castings Co., Columbus, O., and that firm's vice president, Russell C. O'Kane; Symington-Gould Corp., Depew, N.Y., and the firm's president, Hynes Sparks; McConway & Torley Corp., Pittsburgh, and Foundries Export Co., New York, and that firm's president, James Suttie of Chicago.



Who Will Get the Engineers?

FRESHMAN enrollment in engineering schools is near an all-time peak. Yet when these students graduate in 1956, only 16,600 of 29,000 will be available to industry. As the chart on this page shows, Selective Service and the Reserve Officers Training Corps will snap up 12,400 grads before they have an opportunity to enter business.

Figures show that engineering classes and ROTC enrollments are both on the increase. Industry needs 30,000 new engineers annually (STEEL Mar. 16, 1953, p. 78), and total grads will finally be nearing that mark in 1956. Inroads of ROTC on engineering students will increase from 6800 this year to 12,000 in 1955.

Potentially High—The U. S. Office of Education says 1952 enrollment of new engineering students amounted to 51,631—the third largest class ever to enter engineering schools. However, less than three of every five who enter will graduate.

"Filling the annual need for engineers does not seem possible in the foreseeable future," predicts Dr. John W. Graham, assistant dean of the College of Engineering & Science at Carnegie Institute of Technology.

War's Impact—Dr. Graham cites Carnegie Tech's ROTC enrollment as an example of the seriousness of the situation. Some 60 per cent of the freshman class and 55 per cent of the sophomores are in ROTC at the Pittsburgh college. Junior and senior ROTC enrollments are 27 per cent and 15 per cent respectively.

Dr. Graham says deferment of college students from military service has caused criticism from many who do not understand the present manpower problem and the need for properly trained engineers. He continues, "The security of our nation resides in the technical know-how represented in trained minds. National defense requires at least as much service from men out of uniform as from men under arms."

Rheem Buys Water Heater Plant

Rheem Mfg. Co. has purchased the water heater division of the Seidelhuber Iron & Bronze Works Inc., Seattle, with the transfer to take effect July 1.

R. S. Rheem, president, said his company will continue to make the Seidelhuber water heater under that name. Rheem's new Seattle plant is located on a 7½-acre site and the present equipment will be expanded so that a full line of drums can be made.

Seidelhuber Steel Rolling Mill Corp. in Seattle was not involved in the deal. The Seidelhuber Iron & Bronze Works Inc. will retain its name and continue its operations relating to structural steel and fabricating at a new location in Seattle.

Gears: Civilian Ordering Still Strong

Sales of gear manufacturers will equal last year's volume at least. Unexpectedly high civilian ordering is responsible; military work could push volume above 1952 level

GEAR MANUFACTURERS, who six months ago were anticipating a substantial drop in their business volume, now believe 1953 volume will be at least as good as 1952. Last year was a high volume year and represented a 12 per cent increase over 1951.

That is the consensus of executives attending the 37th annual meeting of the American Gear Manufacturers Association at The Homestead, Hot Springs, Va., May 31-June 3.

Military Question — Whether 1953 will exceed 1952 depends on what happens to the military program, which directly and indirectly accounts for about one-fourth of the industry's volume.

Civilian bookings are showing unexpected strength and are largely responsible for the sustained high volume, says G. H. Sanborn, sales manager, Fellows Gear Shaper Co., Springfield, Vt., and new president of the association for 1953-54.

Balancing Act—Gear manufacturers are co-operating with the Office of Defense Mobilization in studying gearing requirements for total mobilization and balancing facilities against requirements for a possible total war. Approximately 75 per cent of gearmaking capacity is represented by the association.

An analytical approach to the problems of purchasing was recommended to the gear manufacturers by A. M. Kennedy, Jr., assistant general manager of purchases, Westinghouse Electric Corp., Pittsburgh.

Big Slice—"Some 45 per cent of every sales dollar is invested with supplier companies who make the materials and parts and provide the services for Westinghouse products.

"Rising labor and material costs and increased tax burdens have squeezed profit margins to ridiculously low figures. The cost frontier is where the battle for leadership is now being fought—and purchasing agents are carrying their share.

"Cost reduction involves several prime principles:

"1. Management must set goals which are realistic and yet difficult to attain.

"2. Teamwork between departments and individuals is the keynote—and anything which weakens group co-operation must be eliminated.

"3. Credit for accomplishment must not be arbitrarily allocated between departments or individuals on a percentage basis; it must be given to all participants on a total-share basis.

"4. To be creditable to management, cost reduction must be audited and verified."

False Economy—"Get the best purchasing agent you can obtain," urged Mr. Kennedy. "You can't afford not to afford the best."

A majority of the convention sessions were devoted to technical work by the association's committees and the development of gearing standards.

Major Paper—Shot peening in the design of gears was the subject of the major technical paper presented. It was by John C. Traub, chief research engineer, American Wheelabrator & Equipment Corp., Mishawaka, Ind.

New officers, in addition to President Sanborn, are: First vice president, R. B. Holmes, general manager, Philadelphia plant, Link-Belt Co.; treasurer, Fred B. Eberhardt, president, Eberhardt-Denver Co., Denver. New members of the executive committee are: Thomas A. Jones, president, W. A. Jones Foundry & Machine Co., Chicago; E. C. Denne, consultant and manager of gear department, United Engineering & Foundry Co., Pittsburgh; R. E. Smallwood, project engineer, Dominion Engineering Co. Ltd., Montreal; Raymond B. Tripp, executive vice president, Ohio Forge & Machine Corp., Cleveland.

NEW AGMA OFFICERS

GEORGE H. SANBORN
AGMA president

R. B. HOLMES
AGMA vice-president

ASQC Strives for Sales

The big job to be done in quality control is primarily in sales rather than engineering and application. That's what members of the American Society for Quality Control said while meeting in Philadelphia.

Most authorities feel that quality control methods at present can make large contributions in many areas, but the system must be sold to those unfamiliar with the field.

At convention sessions, Alfred L. Davis, director of public relations, Rochester Institute of Technology, was installed as the new society president.

Dispute Lasts 13 Years

Metalworking process, with "great possibilities," still awaits acceptance

A 13-YEAR-OLD metalworking invention, the Telenar process, never introduced commercially or tested by the government, is the center of furious controversy between the chief sponsor, Raymond N. Skilton of Newtonville, Mass., and the Munitions Board.

Mr. Skilton describes the machine as a cold flow precision press—a means of press-forming metal without heat or percussion. The sponsor says little finishing of the metal is required, thus speeding production enormously.

Invention — The late Charles Holland-Sherman of Hamden, Conn., invented the process before the U. S. entered World War II. Mr. Skilton, a New England industrialist, took control of the patent after the inventor's death in 1941. Believing the machine to have great munitions-making possibilities, he asked the government to finance its production.

Both the War Production Board and the Air Force were interested in the Telenar process. They asked that it be tested, with production to follow. In each case, tests and government support for the invention failed to materialize. The House Judiciary Committee scheduled a closed hearing after the war to determine why production was not permitted. This hearing was called off when the committee's chief counsel, C. Murray Bernhardt, took another post with the Federal Court of Claims.

Charge Conspiracy — A New Bedford, Mass., newspaper claims that obscure interests in the government still prevent adoption of the Telenar process. Members of the Munitions Board reply that they were forced to abandon interest in the machine since sponsors had not answered repeated invitations to demonstrate it.

Letters on file in the Munitions Board show that Mr. Skilton was asked on Apr. 18, 1952, to prepare such a demonstration. Instructions on presentation were included in the letter.

Deadlock — Since no civilian organization has sponsored the process, this controversy about its merits may never be resolved. Economy-minded government bureaus will insist on complete tests before backing such new inventions as are continually being proposed.

Forging Airpower

At the Fremont, O., plant of the Bingham-Herbrand Corp. a worker heats a forging in a General Electric furnace installed in a $6-million expansion program to produce jet engine parts on a subcontract basis for Studebaker Corp., South Bend, Ind.

CHECKLIST ON CONTROLS

Materials Orders

CONSUMERS DURABLE GOODS — NPA Orders M-47A and M-47B were revoked on May 28, 1953, effective July 1. M-47A serves as a limitation on certain civilian manufacturers of durable goods on the use of MRO materials under CMP Regulation 5. M-47B provides the flexibility needed by civilian manufacturers under CMP.

ALUMINUM—Direction 1 to NPA Order M-88, issued and effective May 29, 1953, permits distributors to dispose of excess forms and shapes of aluminum inventories by selling against unrated orders during the remainder of the second quarter. Persons making purchases with unrated orders are not required to charge the aluminum against any allotment authority, including automatic allotment, self-authorization and quota.

Appointments in Washington

Samuel A. Crabtree, sales manager for the Chicago district, Republic Steel Corp., was appointed deputy director, Iron & Steel Division, National Production Authority.

Thomas R. Reid, director of civic affairs, Ford Motor Co., Dearborn, Mich., was designated assistant director for manpower, Office of Defense Mobilization.

William S. Lambie, formerly senior vice president, National City Bank of New York, was named assistant director for financial policy, ODM.

Raymond Henry Fogler, president, W. T. Grant Co., New York, was nominated by the president as assistant secretary of the Navy.

Bulky Budget Takes $9 Billion Trimming

PROOF that heavy budgets can be trimmed by careful study is shown by comparing President Eisenhower's specific requests for 1954 with former President Truman's.

The President has not submitted a complete budget estimate for next year, and he is expected to make additional requests. To date his requests amount to nearly $9 billion less than Mr. Truman's requests for the same items.

	Truman	Eisenhower
First independent offices	$ 1,172,444,190	$ 888,928,384
Interior department	607,336,400	484,448,200
State department	151,148,590	130,521,337
Justice department	187,150,000	180,110,000
Commerce department	1,131,195,925	961,602,925
Treasury department	665,328,000	614,445,000
Post Office department	2,906,800,000	2,834,700,000
Agriculture department	749,409,342	703,366,242
Labor department	296,818,600	284,915,600
Health, Education & Welfare department	1,786,528,761	1,722,544,870
National Labor Relations Board	9,800,000	9,500,000
National Mediation Board	1,168,000	1,083,000
Federal Mediation & Conciliation Service	3,747,500	3,470,000
Civil functions	683,377,100	498,650,100
Foreign Aid	7,600,000,000	5,828,732,500
Defense department	41,286,448,000	36,039,320,000
Veterans Administration	4,574,214,664	4,295,046,664
Tennessee Valley Authority	254,355,000	190,822,000
Atomic Energy Commission	1,592,789,000	1,096,000,000
Selective Service System	34,400,000	29,920,000
Contribution to District of Columbia	12,000,000	12,000,000
TOTAL	65,706,459,072*	56,800,126,822*

* To each of the above columns must be added certain "fixed" charges—mainly $6.42 billion for interest on the public debt.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

America lends a helping hand to Latin American industry. Engineers and marketing specialists will demonstrate uses and benefits of light machinery

LATEST development of the Point Four program for Latin America is important to American light machinery builders interested in stepping up their export sales.

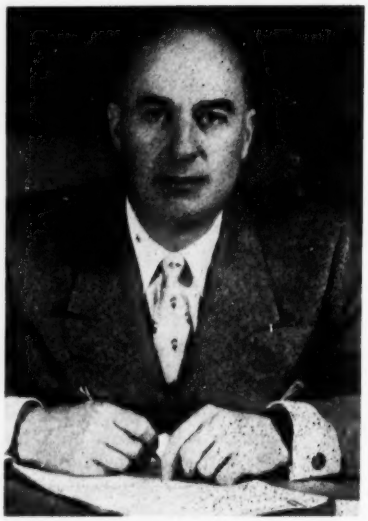
Goals—In a campaign to help manufacturers in some South and Central American countries to increase their production volume, lower their costs through improved equipment and techniques and expand their markets, the Institute of Inter-American Affairs will purchase demonstration equipment. This will be used to show those manufacturers how to lower their costs and increase their output. Orders already have been placed with five builders, and additional orders shortly will be placed with others.

The institute is sending experienced industrial engineers, cost accountants and marketing specialists to those countries. It is organizing committees in each of the countries to push industrialization programs. Key members of these committees will be the area sales representatives of American equipment builders.

Heads the Work—James M. Silberman is in charge of the new undertaking. His address is Institute of Inter-American Affairs, McShane Bldg., 333 Third St. N. W., Washington 25, D. C. He would like applications from experienced men wanting to go to one or another of the South American countries to help in the work. Properly qualified men will be accepted on two-year contracts at good salaries plus expenses.

Mr. Silberman would also like to hear from any American manufacturer who has ideas or equipment—particularly lightweight, portable tools and materials handling equipment—which can improve efficiency in light metalworking plants producing such products as metal household and kitchenware and light tools.

Project Started—IAA already is pushing the programs in Brazil and Chile under agreements with the governments of those countries. Similar work is to be undertaken in El Salvador under a contract just signed. A contract with Uruguay will probably be finalized in a few weeks. Contracts with Mexico, Colombia, Panama and the Dominican Republic are under negotiation, and some other countries are showing interest.



New DMPA Chief

Edward F. Mansure, Chicago manufacturer, was appointed chief of General Services Administration and of the Defense Materials Procurement Agency. His duties with General Services include many activities in strategic materials. He resigned from chairmanship of the board of directors at E. L. Mansure Co., Chicago, to accept his new governmental posts

New Industry for Egypt . . .

First move toward industrialization of Egypt under the Point Four technical assistance program is the awarding of a contract by the Technical Co-operation Administration to A. D. Little & Co., Boston. This firm is to conduct a survey and recommend industries which can be based solidly on Egypt's resources. The Egyptian government will then determine what projects to pursue.

Heretofore Point Four aid to Egypt has been concerned mainly with land reclamation, health, agriculture and education.

Problem Posed . . .

A Point Four technical assistance problem on which the government would like some advice involves a company at Beirut, Lebanon, which now operates a gray iron foundry and a general repair shop. From its machining and forging operations it generates about one ton of steel scrap a day.

The company would like to install a steel casting shop on the basis of its output of steel scrap; it cannot obtain a supply of electric power at this time and wants to use oil as fuel. Details may be obtained from William L. Beck, Office of International Trade, Commerce Bldg., Washington 25, D. C.

Industry on the Outside . . .

Chairman W. Sterling Cole (Rep., N. Y.) of the Joint Congressional Committee on Atomic Energy says Congress probably will not take action until next year on the Atomic Energy Commission's proposal to let private industry play a larger part in developing peacetime atomic power.

Hearings on this proposed legislation are to be held by the committee this month in preparation for action in 1954.

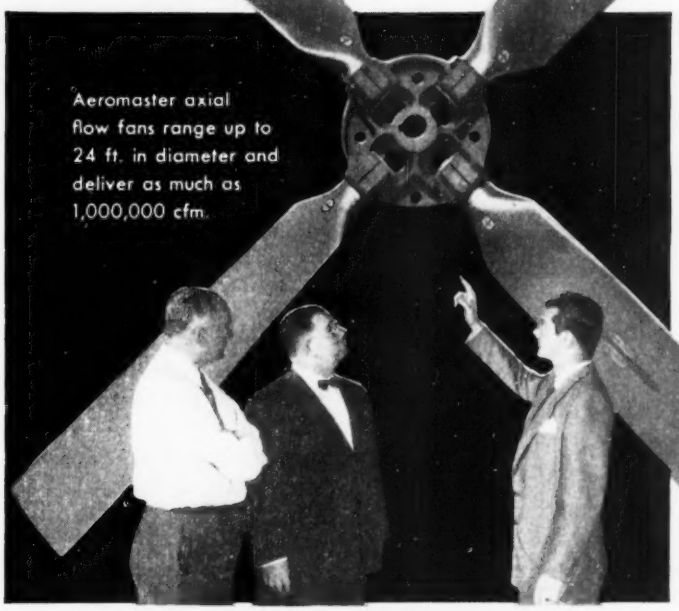
Rate Increases Possible . . .

A bill to permit all types of common carriers to collect higher interim rates because of increased costs while the Interstate Commerce Commission considers permanent increases has been approved by the Senate Commerce Committee and is ready for Senate action.

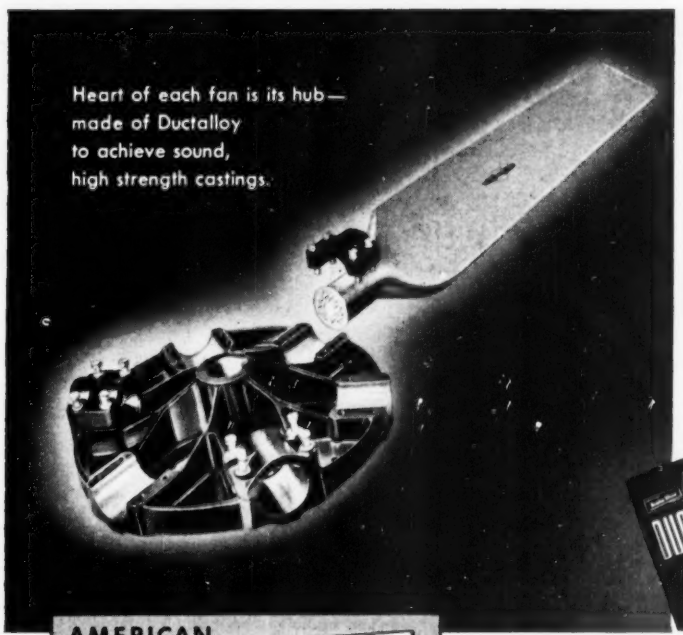
The bill would require the ICC to act tentatively within 60 days on a carrier's application for higher rates and then to begin hearings within another 60 days on making the tentative increases permanent.

DUCTALLOY® CASTINGS GIVE KOPPERS FANS

Strong, Sound Hubs



Aeromaster axial flow fans range up to 24 ft. in diameter and deliver as much as 1,000,000 cfm.



Heart of each fan is its hub—made of Ductalloy to achieve sound, high strength castings.

EASILY CAST, EASILY MACHINED

High performance fans made by the Aeromaster Fan Department of Koppers Company, used in cooling towers near diesel engines and compressors, must withstand considerable applied vibration in addition to normal operating loads. For this reason cast steel was originally specified to provide the necessary hub strength; but machining costs were excessive, surfaces were poor, and too many castings were "lost" when machining revealed hidden defects. A switch to malleable iron only aggravated the problem of casting soundness. The answer was Ductalloy 60—Brake Shoe's easily machined high strength ductile cast iron.

MACHINE SHOP REJECTS ENDED

Ductalloy 60 is a ferritic iron having 60,000 psi minimum tensile strength, 40,000 psi minimum yield strength and 10% minimum total elongation, all guaranteed. Use of this material has virtually eliminated the high scrap loss formerly encountered when defects were uncovered during machining of castings made in either steel or malleable iron.

your problem — Ductalloy may solve your problem if it involves economical production of complex metal shapes that are difficult to cast in steel, expensive to forge or lacking strength in gray iron. Brake Shoe's experience, research laboratory and experimental foundry are available to help you best utilize Ductalloy's unusual combination of characteristics. Write for this new technical bulletin today.

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BRAKE SHOE & CASTINGS DIVISION
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AMERICAN Brake Shoe COMPANY

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"Ganging Up"

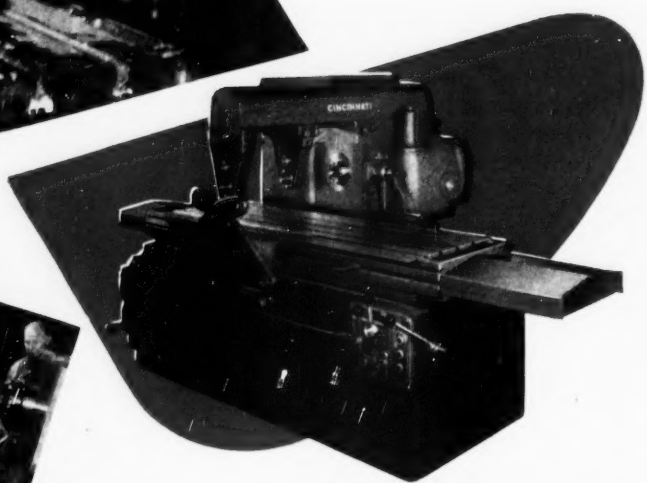
FOR MULTIPLE CUTS

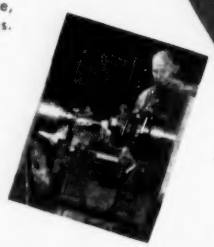
DOUBLES PRODUCTION OF WEDGES

Why take five cuts, when one will do the job? That must have been the question asked of themselves by the shop personnel of the Southern Pacific Company, for they designed a gang of five large cutters to mill five surfaces of locomotive brass wedges in one pass. Production jumped to double the previous method. ¶ Of course, there's one little catch to the practice of combining cuts—you need a machine that can take the load. In this example, a CINCINNATI Plain Hydromatic Milling Machine provided all the power and stamina required for the heavy cutting operation. There are several reasons for Hydromatic's high degree of cutability: heavily proportioned castings throughout . . . up to 50 hp drive . . . Dynapoise vibration damping overarm . . . only four gear contacts in spindle drive. There are many other reasons why Hydromatics can cut metal so quickly. Attractive catalogs give you the complete story.

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO

CINCINNATI Plain Hydromatic Milling Machine, equipped with a special gang of cutters and an air operated fixture, to mill five surfaces of brass wedges.





Write for catalog No. M-1670-1 for the Plain and Duplex machines. Or catalog No. M-1602-1 for the Plain and Duplex Tracer Controlled Hydromatics.

CINCINNATI Hydromatic Milling Machines are available in Plain and Duplex styles, conventional and tracer controlled types, 18 sizes of each, 24" to 90" table traverse, 10 hp to 50 hp drive, standard and complementary unit construction for flexibility in building single purpose machines. No. 5-60 Plain machine illustrated.

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MILLING MACHINES • CUTTER SHARPENING MACHINES • BROACHING MACHINES • METAL FORMING MACHINES
FLAME HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID

U. S. Share of Steel Exports Slips Back

Percentages of Total Exports to Underdeveloped Regions

	Africa		Middle East		Asia & Oceania		Latin America		All Areas Average*	
	U.S.	Europe	U.S.	Europe	U.S.	Europe	U.S.	Europe	U.S.	Europe
1925	3	97	3	97	11	88	35	65	17	82
1945	60	30	62	35	89	9	95	3	84	13
1951	7	89	29	71	13	87	30	62	20	75

*Weighted

Source: United Nations, Economic Commission for Europe, April, 1953.

Europe's Steel Exports Grow

Europe's share of steel exports to underdeveloped areas of the world is back practically to prewar level. America's share has shown a steady decline to almost 1925 rates

U. S. STEEL exporters increasingly feel the competitive pressure of Western European producers as those steelmakers strive to regain and enlarge on their traditional 80 per cent of the Africa-Asia-Latin America steel markets.

In assessing the position of European steel exporters, three points stand out: The Schuman plan pool of raw materials, rising productivity of European mills and increasing costs in the U. S.

Whittling Away—The Economic Commission for Europe report, which shows the slippage back toward 1925 levels of U. S. steel exports to underdeveloped countries (see the table above), comments: "Labor costs per ton of rolled steel usually represent 20 to 25 per cent of total costs. In the U. S., wages are two to four times higher than in Europe and four to five times higher than in Japan. . ." Europeans are also whittling away at the American advantage gained through higher productivity. It's estimated there will be 11 continuous and semicontinuous wide-strip mills and four Steckel mills in operation in Europe by 1956. These new strip mills will have greater output at less cost than older mills now being used.

The ECE points to "the near exhaustion of high-grade iron ore resources in the Mesabi range and the consequent necessity to increase ore imports or possibly to use taconites on a large scale" which will progressively raise the cost of ores. On the other hand, "the setting up of the European Coal and Steel Community (the Schuman plan) should enable many continental steel producers to benefit in full from their favorable geographical location in relation to raw material supplies."

Little Competition—Product by product the ECE report continues: "Bars, wires, rails and heavy plates have not, so far, lent themselves to spectacular new methods of mechanization and the lower hourly wages in Europe probably result in lower rolling costs than in the U. S.

"In sheets, tin plate and other coated sheets, American steel producers had an advantage over the European producers, derived from their numerous continuous wide-strip mills. Now that these mills are coming into production in Europe this advantage should no longer exist to the same extent.

Still in Doubt—"In welded tubes, the U. S. appears to have had an advantage over European producers before World War II, and Europe the edge in the case of seamless tubes. Since the war improvements in production technique of seamless tubes have been made in the U. S.; production techniques for welded tubes have made great strides in both Europe and the U.S. It's not clear which group of producers will be in the more favorable position in the future."

Of course, there are many other factors which will enter into the coming world steel markets such as currency preferences, business connections, terms of payment and technical assistance. But, it's certain that European steelmakers intend to set a stiff pace pricewise in the competition for steel markets in the underdeveloped nations.

Iron Curtain Schuman Plan

European countries behind the iron curtain are developing an eastern Schuman plan of their own.

The plan calls for large steel centers in Czechoslovakia, Poland and Hungary which will be supplemented by Rumanian and Austrian oil developments. A steel plant named Stalin-Varosch has been under construction since 1950 at Dunapentele, a small village about 40 miles south of Budapest. In 1950 this village had a population of 600; today it's a city of 50,000. Another steel plant under construction at Kuntschitz, Czechoslovakia, will be the largest plant in the plan.

Similar steel plants are being expanded or constructed in upper Silesia and further down along the Oder river. They all have been connected with Rumania or Austria by large oil pipe lines.

Foundries for Mexico

Four new foundries are due to be installed in Mexico this year as part of a program to make that country self-sufficient in iron and steel. Already $697,800 has been invested in the foundry projects. The Mexican government may also lend financial aid later. Iron ore is to come from mines in Las Truchas, Oaxaca, Durango, Sonora and Veracruz.

Burroughs

Demand rises for accounting machines as . . .

Automatic Equipment Brings A Revolution in Paperwork

ELECTRONICS and automation are revolutionizing the office worker's life as they have already changed the plant laborer's career. Trends in office equipment are towards greater productivity by the average worker and fewer persons doing routine "paperwork."

When W. S. Burroughs founded Burroughs Adding Machine Co., Detroit, in 1886, he estimated that the market would be saturated when 8000 adding machines were built. Sales at Burroughs have climbed very far since then, averaging about $40 million between 1941 and 1946, moving up to $87.4 million in 1950 and reaching an estimated $100 million in 1951.

Total Sales—In the entire office equipment industry, including typewriters, sales reached $1.3 billion in 1952, slightly below the postwar peak one year earlier. Some 12 companies producing adding, computing and accounting machines hope to surpass their best sales figures this year.

"Outlook is for steady production at current levels," say officials of Underwood Corp., New York. They add that sales of accounting machines are a shade above last year while adding machines are slightly lower. Output for the first three months of this year was greater than for the corresponding period in 1952 at International Business Machines Corp., New York. The company expects production will remain at a high level through the year.

Automation—Technical development centers about electronics at Monroe Calculating Machine Co. Inc., Orange, N. J., as at other office equipment plants. With Monroe, the fully-automatic machine is the leader in sales.

Electronic tubes for storing numeric information help process work at tremendously high speeds. Remington Rand Inc., Buffalo, has a division that specializes in developing special electronic measuring and accounting devices for industry, tailor-made to specific requirements. Spokesmen for the company predict a great development in that field. In the future, small transistors may do the same job that a tube is now doing. As transistor circuits are developed, they will reduce costs and sizes of units and minimize the heat in electronic devices.

Helps Accuracy—Automation is cutting costs of office work and increasing accuracy. Burroughs believes office equipment is in a state of evolution, citing its Sensimatic mechanical accounting machine, shown in the photograph at left, as indicative of the trend toward multiple tasks for one machine. Plates in the back of the Sensimatic can be changed to adapt it to totally different accounting jobs.

Further results are in speeding up the office worker's daily output. Some computing machines can work 16,000 addition and subtraction problems in one second. A new machine developed by General Register Corp., Long Island City, N. Y., and produced by Burroughs automatically prints tickets to any destination from blank stock, keeps a record of all tickets sold and maintains running totals of fares.

Manpower Savings — The Office Equipment Manufacturers Institute says that without their new mathematical tools, calculations needed by business would require from five to 25 times as much manpower as is now used. Without tools to do checksigning, checkwriting and cash-registering, four times as many people would be needed to handle the flow of money. Without properly designed forms and modern equipment for dictating, typing, duplicating and addressing, 20 to 30 times as many persons would be needed for communication in business and industry.

Far from throwing people out of work, this development makes possible much more complete tabula-

tion of records. Just as shop mechanization pays in the long run, many firms are finding it pays to mechanize their records.

ODM Issues 134 Write-Offs

Tax write-offs for 134 new or expanded facilities amounting to $165.1 million were issued by the Office of Defense Mobilization in two weeks ending May 20. Some 61 of the latest batch of grants, for about $16.3 million, are going to small business.

Among the largest certificates of necessity were three to American Can Co., New York, for a total of $8 million and one to Joseph T. Ryerson & Son Inc. for $1.3 million expansion in steel warehousing and processing in Cincinnati.

This action brings total accelerated tax amortization granted by ODM to more than $26.5 billion for 16,945 new or expanded facilities.

More Coal and Coke Coming

Assurance of enough coal and coke for expanded blast furnace and other industrial capacity comes with the Defense Solid Fuels Administration report that 17 million tons of coke oven capacity and 13.5 million tons of metallurgical grade coal capacity have been approved for tax amortization under the present defense mobilization program.

With additions made in April to metallurgical coal and coke capacity goals of 2.5 million tons and 1.8 million tons respectively, present ODM targets for defense requirements are 139,750,000 net tons of coal output and 85.8 million net tons of coke production facilities annually. The goal for coal is expected to be reached this year, but the coke goal is not expected to be attained before Jan. 1, 1955.

Steel Payroll Up $100 Million

The iron and steel industry's estimated payroll during the first quarter of 1953 totaled $828,054,000, or nearly $100 million higher than in the first quarter of 1952, according to American Iron & Steel Institute. This three-month total exceeded the full amount of wages and salaries in 1939.

Average hourly wage payment was $2.210 for the first quarter of 1953, and $2.206 in March to wage earners who worked an average of 40.3 hours a week during that month. Wage earners in March, 1952, received 25.6 cents less per hour and worked 39.8 hours a week.

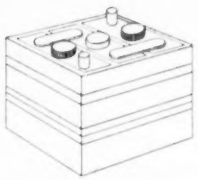
Estimated total employment during the first quarter of 1953 was 683,900 against 672,700 in the corresponding part of 1952. The industry's estimated total employment in March, 1953, was 683,100 —11,000 higher than in March, 1952, but a decline of 1800 from the record high level reached in February of this year.

Refractories Off from Peak

Shipments of clay and nonclay refractories were $301 million in 1952, an 8 per cent decrease from the peak year of 1951, says the Bureau of Census. Clay refractories slipped 5 per cent from $171 million in 1951 to $162 million in 1952; nonclay refractories declined 11 per cent from $156 million in 1951 to $139 million in 1952.

AMF Develops New Trainer

American Machine & Foundry Co. is delivering to the Air Force a revolutionary new trainer designed and built by its Boston electronics division, reports the New England Council. With it, air crews can be drilled on the ground in perfectly simulated high-altitude runs over actual targets. The machine uses a big relief model which reproduces in miniature all the bridges, railroad yards, munitions plants and other points to be hit by bombs. A complicated electronic-ultrasonic scanner passes over the model, and in spite of the difference in size, translates it into the same blips a bombardier would see on his radar screen in a high-level run over the real thing.



Storage Batteries:

More of Them for More Autos Spells Increased Business for Lead Producers

STORAGE BATTERIES, the largest single users of lead, will up their consumption of the heavy metal in 1953 by about 7.5 per cent over last year. Most of that increase will be accounted for by the automotive industry as industrial battery business stands pat.

In making his annual predictions for the Lead Industries Association, Robert L. Sommerville, president of the Association of American Battery Manufacturers, said that storage batteries would account for 415,200 tons of lead in 1953.

Even Keel—He said that industrial batteries would consume 47,800 tons, or roughly the same amount as last year. That includes supplies for railroads, marine, public utilities, material handling, telephones, other industrial applications and certain classifications of governmental uses.

AABM breaks the automotive field down into four categories: Government, original equipment, export replacement and domestic replacement. Government requirements will advance 1.6 per cent to 9300 tons of lead, but more important will be the 26.5 per cent gain for new cars, trucks and tractors. That estimate is based on output of 5,750,000 passenger cars, 1.3 million trucks and 462,000 tractors. All told, they will gobble up 83,050 tons of lead for plates.

Big Hog — The export replacement battery business will show up with 5150 tons before the year is out, up 5 per cent over 1952. But the real weight of the metal will be felt in domestic replacement. Estimates throughout the industry range from 21 million up to 24.9 million batteries for older model cars. Mr. Sommerville settles for 23,470,000, which would require 269,000 tons of lead. If he is correct, it will be the third largest year for replacements, following the 25 million units in 1947 and 24.5 million in 1950.

Specify

BUMPER FACE-BAR

for

High Strength and Impact Resistance with Excellent Cold-Formability

N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values at normal and sub-zero temperatures and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

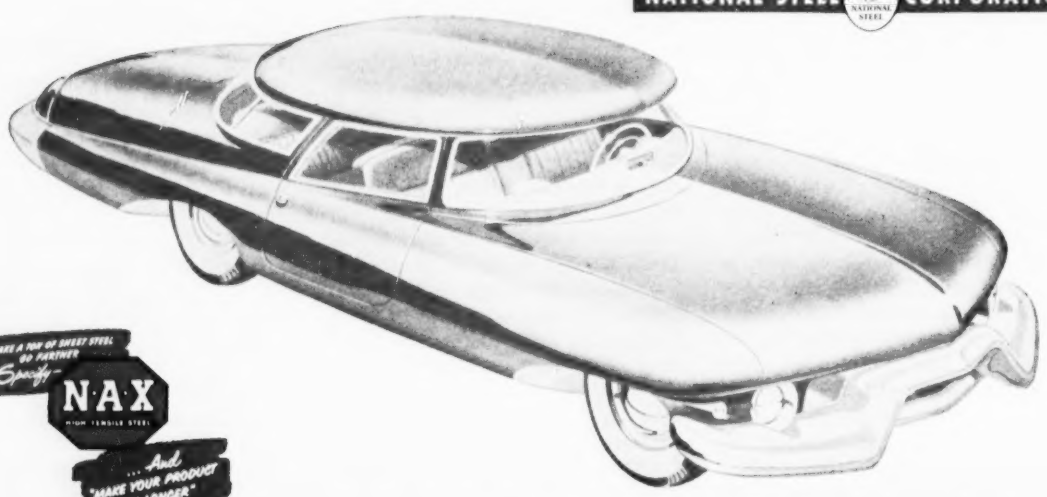
N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, it can be ground and polished to a high degree of lustre at lower cost than can mild carbon steel.

Your product can be made lighter in weight . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

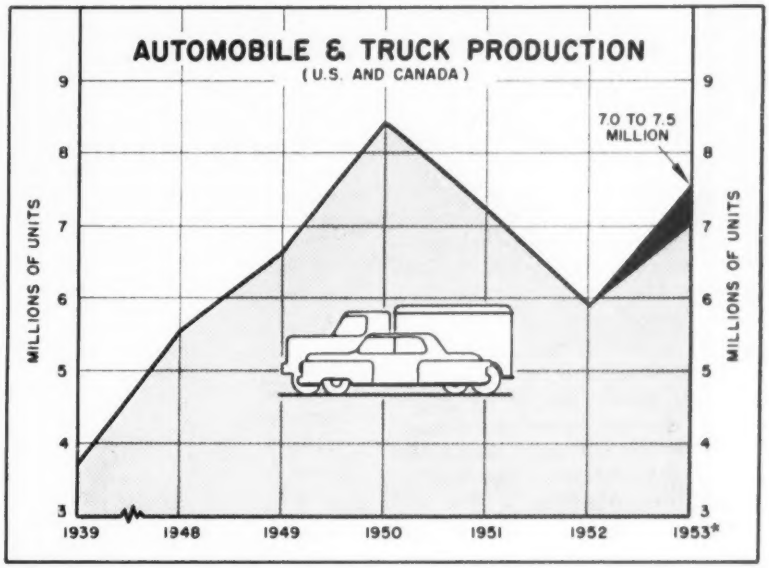


KEEP YOUR SCRAP MOVING TO YOUR DEALER

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Automakers act as if they never heard of dire forecasts of a poor second half. Some 7.5 million units may be produced in 1953, second best output in history



Sources: Automotive Manufacturers Association, Ward's Automotive Reports

DETROIT

AUTOMAKERS roaring at top speed down the production highway seem surprisingly like the average motorist himself.

Each knows that someone might get hurt, but is sublimely confident that if accidents happen they'll occur to the other fellow.

Far Reaching—The import of this situation lies in the fact that if there is an auto production smashup it is likely to dent the fenders of industry far beyond the reaches of Detroit and could conceivably send the entire economy to the emergency clinic for recession repairs. For that reason observers are watching the auto industry closely as an index to what lies ahead—continued prosperity or recession—and there are plenty of facts to be garnered for either point of view.

None garners his facts more avidly than Walter Reuther, UAW-CIO president. In a letter remarkable for its naivete, Mr. Reuther directed the attention of auto, truck and parts firms to the industry estimate of 5.5 million passenger car units to be produced in the United States this year. He then chided them on the fact that industry production figures show that over 60 per cent of this quantity will be produced by the end of June with an indicated one-third cut in production during the next six months, concluding that our economy will suffer as the auto industry cuts back.

Indisputable?—The mathematics of the situation would be indisputable except that Mr. Reuther's 5.5 million figure is a child born out of deadlock. In the days when the automakers were trying to get material under controls, they agreed to an arbitrary number of 5.5 million cars for 1953 in order to fill in the blank on the government form. Many, frankly, did not expect the number to be that high and you will perhaps recall opinions that the year would fall below 1952 by a considerable margin.

Thinking in the auto capital has been sharply revised by the first five months of this year. The number of 5.5 million passenger car units could still be exactly right or even on the high side. But you will find more among the automakers today who believe the number was pegged too low, and that 1953 will produce over 6 million passenger cars and 1 million trucks in the United States, plus 500,000 cars and trucks in Canada for a 7.5 million total, second biggest in the history of the industry (see the chart).

Optimism—General Motors' Harlow Curtice promises that his firm's production will continue unchecked during the second half of 1953 and Chrysler's Robert Conder sees continued prosperity for that firm. Top Ford Motor Co. officials report that their company plans to build even more cars in the second half of 1953 than were produced in the first half, but they are convinced that the production trend of the industry as a whole will be somewhat downward after midyear.

Each of the Big Three, in short, sees current or higher production schedules ahead during the second half for itself and looks with something strikingly akin to pity on the rest of the industry. Each has vouchsafed his sincerity in seeking production by signing UAW contract revisions with an alacrity that could indicate no other motive. The industry which some weeks ago predicted steel would be easing during the third quarter is now beginning to wonder if steel will not be tight in the fourth quarter as well, and "insurance" orders for conversion steel in the fourth quarter have already been placed by some automakers.

Going Ahead—The one thing that may be safely concluded is that the automakers are preparing to make cars uninterruptedly during the second half. Whether or not these preparations are warranted is a question that economists are polishing up their crystal balls

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to determine. Dealer stocks of new cars are rising, used cars are a drug on the market and auto paper is getting tighter. But despite the economic traffic jam, cars keep pouring out of the factories onto the road.

"Perhaps," says James Cope, Chrysler vice president, "we are psychologically attuned to pessimism, and during a period of prosperity we listen most closely to the prophets of doom. The sensationalism of predicting an end to prosperity may often be predicated on a minimizing of the favorable factors in the situation."

Still Good—The auto companies see some downturn in the second half. It should not be as great as Mr. Reuther warns and should affect the Big Three less than most of the independents. The era of competition in selling is just beginning and there are many enticement stops that have not yet been pulled on the auto sales consoles. Even so the second half ratio looks better than the prewar normal sales drop-off for the period.

Few auto firms are planning major body and styling changes during 1954. Engines and chassis components will be in the spotlight next year and should do much for themselves to spur sales. Styling changes will come in 1955 and 1956 with indications that they, too, will keep the paying customers drooling and paying.

Prospects—The automakers are looking ahead. This year is earmarked as the second best in the industry's history and hardly sounds like recession. Overproduction is a threat but seems unlikely in any serious degree. And for the ultimate future, Ford's vice president of finance, Ted Yntema, reports, "I don't think just because we have had a high level of business in one instance we have to have a big recession if we exercise properly the use of money and credit. A major recession need not happen again and I don't think it will."

Car of the Week

Early in 1951 the Nash Rambler was given induction tests by the Army. It was driven 14,000 miles at varying speeds and over paved, secondary and Belgian block roads.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,174	570,464
May		542,559
June		542,478
July		226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
May 2	184,800	123,385
May 9	179,621*	130,509
May 16		177,305
May 23		162,447
May 30		127,269
June 6		138,000*

Sources: Ward's Automotive Reports.
*Estimated by STEEL

It was driven up a 30 per cent grade, given braking and field dynamometer tests and loaded with 1200 pounds of steel in various concentrated and diversified positions. It was given a frame twist test, driven over a road banked at a thirty degree angle and bounced over a washboard road surface. Then, and only then, was it put into service hauling Army Brass between the Pentagon and the Aberdeen Proving Ground.

The Brasses won't be dragging in the Rambler. This cute little wagon has a number of secret weapons all its own, including competitive light car ride, nimbleness in traffic and a very nice cornering action startlingly reminiscent of the MG. Most autos on the road today will find it very tough sliding to stay in a tough turn with the Rambler.

Nash wisely does not make great noises about how many passengers the Rambler will carry. Six obviously can be squeezed in, but two in the front and two in the back seem about par for any extended course. Knee and foot room in the back seat is very limited with the front seat moved back, approximating conditions in some club coupes.

Interior styling and color contrast are striking and well done. However, the car possesses an "economy" look in some respects which betrays its chic exterior. The dash cowl is pleasingly laid out, but finish and trim leave something to be desired, unlike the Statesman or Ambassador whose interiors sparkle.

But all things considered, the Nash Rambler is a very nimble piece of machinery that looks and handles like fun. All too few cars in this country today can make that statement.

Dodge Opens New Western Plant

Dodge Division, Chrysler Corp., has commenced operatons in its new body assembly plant on the east side of San Francisco bay, at San Leandro, Calif. Seven hundred fifty thousand square feet has been added to the Dodge final assembly plant, which began operations in 1948.

Detroit will now ship only stampings to San Leandro instead of already asembled passenger car bodies. Aircraft propellers will also be completed in the new plant.

Exhaust Notes

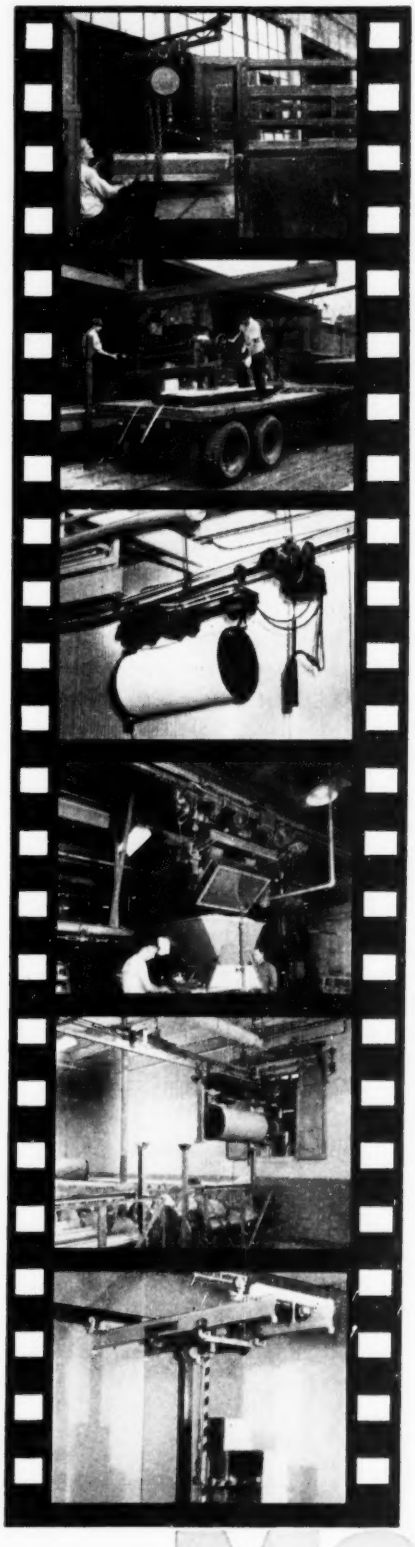
Hudson announces a "new type" of sports car to be built around the Jet chassis, coupled with an nouncement that additional body types are in the tooling stage or projected for the future. This "new type" sports car has observers speculating that the car will be a four-passenger convertible somewhat like the Nash Rambler, rather than the Chevrolet or Kaiser jobs, and a candidate for the sporty rather than sports car ranks.

Willys Motors Inc. has received a $3 million contract for a new front-line jeep ambulance, the new firm's first production order.

Commencing Aug. 1, Ford Motor Co. will assume distribution of the Ford tractor and farm equipment upon dissolution of distribution arrangements with Dearborn Motors Corp.

Ford plans to build a huge new car and truck assembly plant in the greater New York area and is negotiating to purchase a 200-acre site near Mahwah, N. J. Also planned are plants at San Jose, Calif., and Louisville.

Oldsmobile recently produced its 4 millionth automobile.



Quickly removes die blocks from trucks

Saves $30 each truck unloaded

Delivers beams to another building

Automatic delivery of core sand

Automatic transfer of slasher beams

Stacker crane increases storage by 60%

a 16 mm movie that discusses handling problems common to every industry

Before you decide upon any material handling equipment, let us loan you "Up and Over". This 16 mm film shows many installations of American MonoRail overhead handling equipment. You will see hand operated to fully automatic systems—one or more that may be particularly adaptable to your operations. The film is educational, interesting, informative and shows the way to economical, safe and time-saving material handling. Your ticket of admission is only a note to us asking for a print. It will help us if you advise the exact date, as close as possible, when you wish to use it.

THE AMERICAN MONORAIL COMPANY

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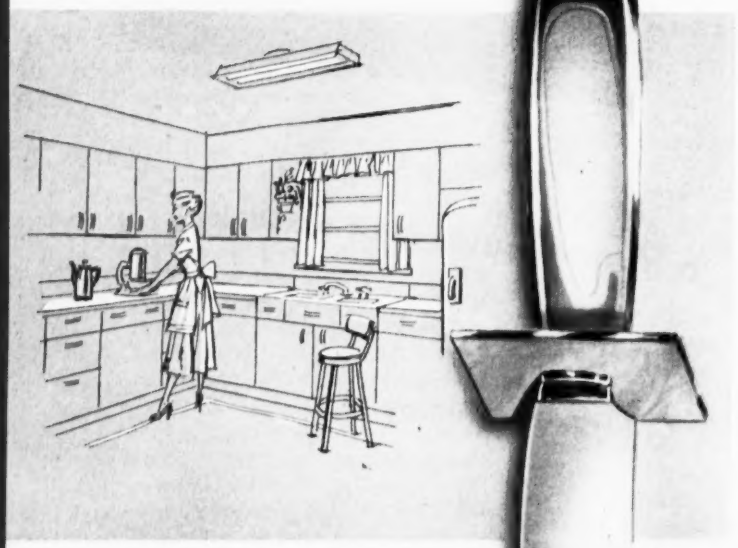
Stainless with the better finish is ...



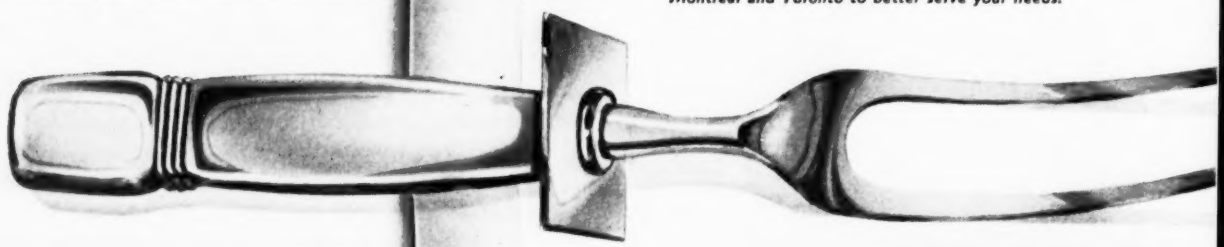
SHARON STAINLESS STEELS

If you manufacture a product that requires "eye catching" beauty, then you'll want to know about Sharon Stainless Steels . . . sparkling stainless with the industry's finest finish.

Leading manufacturers the nation over, making everything from cutlery to pots and pans, are agreed that when it comes to finish nothing surpasses the bright, blemish-free surfaces that are consistent with Sharon Stainless Steels.

Isn't it just common sense, then, if you're thinking of Stainless to think first of Sharon Stainless and be sure you get the finest?

There are Sharon offices located in Chicago, Cincinnati, Cleveland, Dayton, Detroit, Indianapolis, Milwaukee, New York, Philadelphia, Rochester, Los Angeles, San Francisco, Montreal and Toronto to better serve your needs.

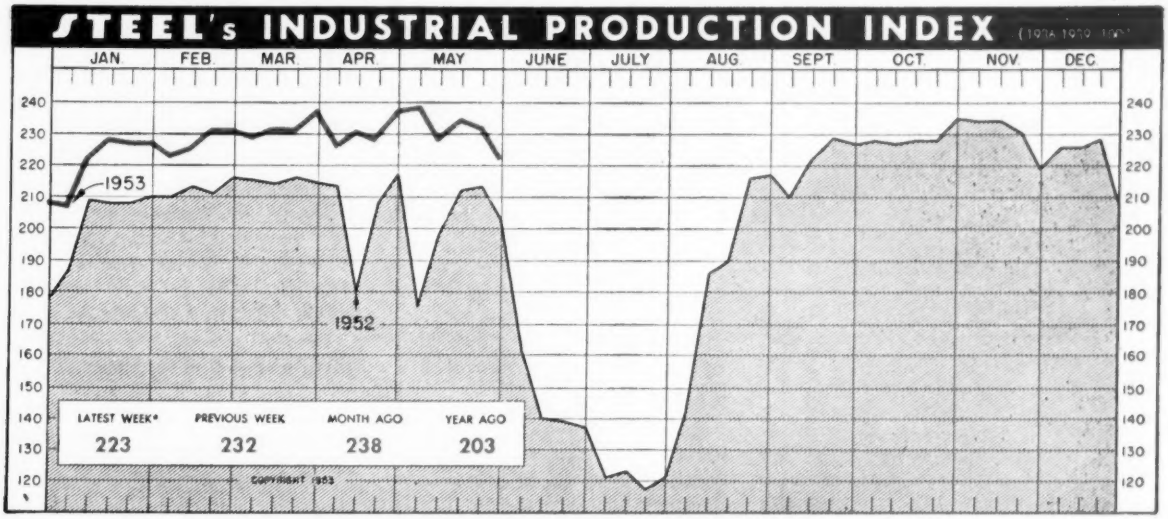


Get the 430 Story

Sharon has prepared a fact-packed, fully illustrated booklet with up-to-the-minute information about 430 Stainless Steel. To get your free copy contact your nearest Sharon representative or write direct.

SHARONSTEEL

SHARON STEEL CORPORATION *Sharon, Pennsylvania*



*Week ended May 30 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%

Industrial momentum won't set new records until inventories of automotive parts are rebuilt to former levels. Index plunges to lowest mark in five months

CHANCES ARE industrial output won't get back in full stride until the middle of June.

The nation's production of durables will remain under the level attained in early May until automotive companies can rebuild their strike-depleted inventories. Most automakers expect to return to full operations on or around June 15. Only then, will inventories be high enough to support such an output.

Sunny Side—Other prime indicators of production are remaining favorable, however. Steel production is up over the rated capacity on Jan. 1. Freight car loadings are continuing to improve, bearing out regional shippers' boards rosy predications for the first half. Electricity production—one of the best indicators of industrial velocity—is surging about 12 per cent above generation a year ago.

Output Drops—As automotive assemblies plunged, STEEL's industrial production index dropped in the week ended May 30 to the lowest level since the start of the year. The red line on the index that week moved down 9 points to 223 per cent of the 1936-1939 average. That's still a good 20 points above the 203 per cent reading of the comparable week in 1952, which immediately preceded the start of the steel strike.

Steel Production Hefty . . .

The steel industry is keeping in full operation as demand shows little sign of waning. The American Iron & Steel Institute estimates that furnaces poured in the week ended June 6 about 2,262,000 net tons of steel for ingots and castings. This estimated output is the same as actual production in the previous week.

New Peak in Autos . . .

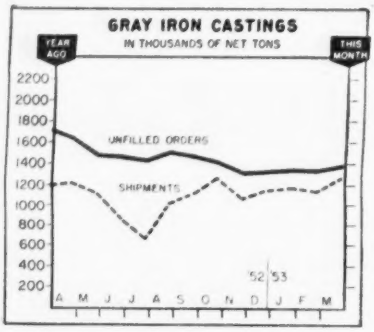
The passenger car industry may rack up the highest January-June turnout in history, despite the effects of the recent suppliers' strikes. These strikes, however have just about erased the industry's chances for a 1.8 million unit-volume for the second quarter. The first quarter yielded 1,519,762 passenger vehicles and completions in the second quarter will total around 1,754,000 autos, estimates *Ward's Automotive Reports*. The grand total for the half-year would then be well over 3.2 million units, compared with the record 3.1 million totals of the first six months in both 1950 and 1951.

U. S. and Canadian plants in the week ended May 30 produced 127,269 passenger cars and trucks, a drop of 35,178 passenger cars and trucks from the previous week. Combined U.S.-Canadian production in the week ended May 31, 1952 totaled 104,935 passenger cars and trucks. (For second half predications, see p. 61.)

Appliance Picture Bright . . .

Demand is remaining sturdy for household appliances, indicating that the peak in installment credit may be yet to come. Immediately following the outbreak of Korea, demand for appliances shot skyward and production followed suit. Then, in the late spring of 1951 the bottom dropped out of the appliance market, with many manufacturers being caught with towering inventories of finished goods. Demand started on the improvement path about a year ago, and most appliances today are selling far better than at this time last year.

Gas household appliances are an example. Gas Appliance Manufacturers Association Inc. says that shipments of domestic gas ranges in April totaled 232,400 units, or 27 per cent above industry shipments in April, last year. Range

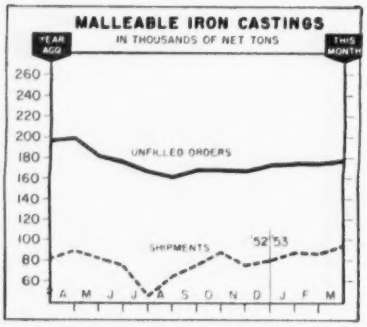


Gray Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	1,162	1,199	1,333	1,801
Feb.	1,136	1,155	1,332	1,766
Mar.	1,264	1,172	1,376	1,711
Apr.	....	1,205	....	1,614
May	....	1,101	....	1,459
June	....	835	....	1,445
July	....	636	....	1,410
Aug.	....	1,002	....	1,513
Sept.	....	1,119	....	1,451
Oct.	....	1,233	....	1,392
Nov.	....	1,061	....	1,309
Dec.	....	1,142	....	1,316
Total	....	13,660		

*For sale. U. S. Bureau of the Census

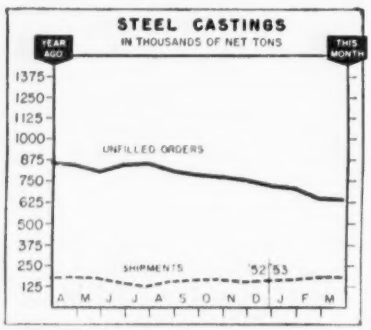


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	87.2	87.0	174.8	203.0
Feb.	86.5	82.9	175.1	193.1
Mar.	94.5	81.0	177.8	196.9
Apr.	....	89.3	....	198.2
May	....	81.8	....	180.4
June	....	74.4	....	173.4
July	....	45.3	....	166.6
Aug.	....	63.7	....	162.8
Sept.	....	75.9	....	168.4
Oct.	....	88.1	....	168.6
Nov.	....	76.1	....	167.8
Dec.	....	80.6	....	173.5
Total	....	926.1		

*For sale. U. S. Bureau of the Census.

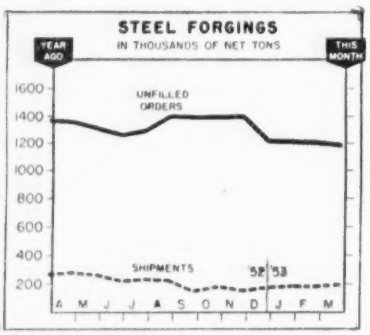


Steel Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	167.2	183.7	706.5	869.3
Feb.	175.7	174.6	644.3	856.9
Mar.	182.2	173.7	634.6	857.1
Apr.	....	175.1	....	843.0
May	....	173.6	....	804.7
June	....	141.6	....	846.5
July	....	119.0	....	855.0
Aug.	....	150.2	....	809.4
Sept.	....	158.4	....	781.9
Oct.	....	165.2	....	772.9
Nov.	....	148.3	....	751.7
Dec.	....	161.7	....	719.2
Total	....	1,925.1		

*For sale. U. S. Bureau of the Census.



Steel Forgings*

Thousands of Net Tons

	Shipments		Unfilled Orders	
	1953	1952	1953	1952
Jan.	184	271	1,207	1,472
Feb.	184	277	1,199	1,464
Mar.	201	266	1,185	1,360
Apr.	....	277	....	1,349
May	....	263	....	1,319
June	....	224	....	1,248
July	....	132	....	1,290
Aug.	....	121	....	1,399
Sept.	....	150	....	1,392
Oct.	....	178	....	1,393
Nov.	....	156	....	1,399
Dec.	....	181	....	1,377

U. S. Bureau of the Census. *Data based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....May 25	Gear Sales .....May 18	Ranges, Elec. .....Apr. 13
Durable Goods ....May 4	Indus. Production..Apr. 27	Ranges, Gas .....May 18
Employ., Metalwk..May 4	Ironers .....Apr. 13	Refrigerators .....May 18
Employ., Steel ....June 1	Machine Tools ....Apr. 27	Steel Shipments ....May 4
Fab. Struc. Steel...May 18	Prices, Consumer ..May 4	Vacuum Cleaners ..May 11
Foundry Equip. ...June 1	Prices, Wholesale ..June 1	Wages, Metalwk. ..Apr. 27
Freight Cars .....May 11	Pumps .....June 1	Washers .....May 11
Furnaces, Indus. ..May 25	Radio, TV .....May 25	Water Heaters .....May 11

shipments in the first four months of 1953 rose 17 per cent above the same period of a year ago to 817,100 units. Shipments of automatic gas water heaters in April rose 43 per cent from a year earlier to 218,600 units. Shipments in the first four months of 1953 totaled 797,000 units, or 32.7 per cent over the same 1952 period.

Laundry equipment is also following the general appliance pattern. Factories in April sold 345,986 standard-size household washers, an increase of 33 per cent, says the American Home Laundry Manufacturers' Association.

Installment Buying Soars . . .

Manufacturers of consumer durables might well take a good look in the rise in installment credit before going ahead and increasing their production. The over-the-year increase in installment buying is almost phenomenal and total installment indebtedness is staggering. The Federal Reserve Board says that total installment credit in the year ended May 1 rose 34 per cent to $19,666 million. Automobile credit in the same period leaped 46 per cent to $9073 million. If installment credit keeps spiraling upward, many manufacturers may find even their strongest promotion technique to little avail: Mr. and Mrs. Doe simply won't be able to afford a new refrigerator, passenger car or TV set.

Production Levels Off . . .

Industrial production in May leveled off at the April rate—1 point under the postwar high of March. So estimates the Federal Reserve Board which says that production of both durables and nondurables tapered off slightly in April. The board's production index in May stood at 242 per cent of the 1936-1939 average, compared with 216 per cent a year earlier.

Structurals Backlog Down . . .

Producers of fabricated structural steel are finding their supply of unfilled orders is on the wane as industry shipments increase. The American Institute of Steel Construction says that the industry held orders for 2,167,758 net tons

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	100.5	100.0	102.5
Electric Power Distributed (million kwhr)	7,960[1]	8,013	6,811
Bituminous Coal Output (daily av.—1000 tons)	1,460	1,521	1,478
Petroleum Production (daily av.—1000 bbl)	6,320[1]	6,360	Na.[8]
Construction Volume (ENR—millions)	$291.3	$257.6	$307.8
Automobile, Truck Output (Ward's—units)	127,269	162,447	104,935
TRADE			
Freight Car Loadings (unit—1000 cars)	780[1]	770	697
Business Failures (Dun & Bradstreet, number)	168	156	136
Currency in Circulation (millions)[3]	$29,825	$29,795	$28,710
Dept. Store Sales (changes from year ago)[3]	+8%	+6%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,612	$18,304	$16,579
Federal Gross Debt (billions)	$265.2	$265.8	$259.6
Bond Volume, NYSE (millions)	$15,780	$14,819	$9,299
Stocks Sales, NYSE (thousands of shares)	5,843	6,834	4,098
Loans and Investments (billions)[4]	$76.0	$75.8	$73.4
United States Gov't. Obligations Held (billions)[4]	$28.8	$29.0	$31.6
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	182.82	182.82	171.92
STEEL's Nonferrous Metal Price Index[6]	224.0	223.3	232.4
All Commodities[7]	109.8	109.9	111.8
All Commodities Other Than Farm and Foods[7]	113.4	113.6	113.3

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100. [8]Not available.

of structurals on May 1, compared with 2,350,974 tons on order a year earlier.

Shipments in the first four months of 1953 amounted to 1,081,541 tons, as compared to 990,855 net tons in the same months of 1952.

Foundry Equipment Lags . . .

New orders for foundry equipment are declining under a year ago as many companies round out their industrial expansion programs. The Foundry Equipment Manufacturers Association says that new orders placed in April for foundry equipment had a valuation of $1.3 million, compared with $1.7 million in April, 1952. Shipments of equipment are mirroring the downtrend in new orders. April shipments were valued at $1.6 million, compared to $2.4 million in equipment shipped in the same month, last year.

New Firms Aplenty . . .

A good indicator of both the abundance of new ideas and the hopes of businessmen is the growing number of new incorporations. New firms totaled 9507 in April, the highest figure for the month in five years. This represents a decline of 1.6 per cent, largely seasonal, from the March figure. Of major significance is that this amount is 14.8 per cent above the figure for the same month of last year.

The first four months of this year have all been appreciably above the same months of 1952, in the aggregate a gain of 15.5 per cent. Corporate activity in the first third of 1953 has ushered in 36,577 new business organizations, the highest for any similar period since 1948.

Trends Fore and Aft . . .

Awards for heavy construction in 1953 are running about 18 per cent in valuation over a year ago . . . Frigidaire dealers in the week ended May 22 chalked up the biggest volume in history with sales of the product totaling $24.7 million . . . The purchasing value of the dollar is only 56.3 cents of the January, 1939, dollar . . . Department store sales are totaling about 8 per cent above a year ago . . . Shipments of gas-fired central heating equipment (boilers, furnaces and conversion burners) in the first four months of 1953 rose 13.7 per cent over the same period in 1952 . . . Strikes in April cost 2.5 million man days of idleness in April, or more than double the strike toll in March.

is spring steel up your alley?

. . . ours too

Pictured is just one of the aisles in Kenilworth's specialized spring steel stock department; here you see a portion of the wide variety of types, sizes and finishes (annealed or tempered) always on hand. Whatever your requirements, however small, Kenilworth can handle your orders quickly. You are assured of uniform end results plus Kenilworth's accurate meeting of specifications in shipment after shipment. Your inquiries are invited.

THE Kenilworth Steel co.

750 BOULEVARD
KENILWORTH, N. J.

SPECIALISTS IN FLAT ROLLED METAL PRODUCTS

Telephones: N. Y. COrtlandt 7-2427
N. J. UNionville 2-6900
Teletype: Roselle, N. J., 387

In line with standards for

Increased Tonnage

...HEPPENSTALL

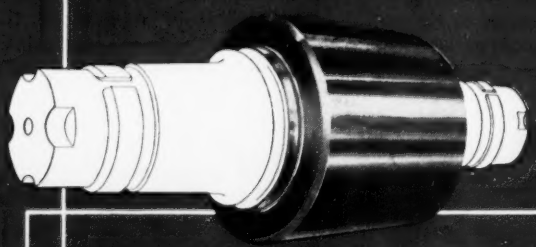
Back-Up Roll Sleeves make good production sense

The records of many leading rolling mills show that Heppenstall Sleeves for Back-Up Rolls play an important part in producing the following production benefits:

Less Down Time

Increased Productivity

Lower Overall Costs



And, there are good reasons why the records show exceptional service resulting from the use of Heppenstall Sleeves. It's because they're "custom-made" . . . normalized, annealed, heat treated, and tempered to exact specifications. The results:

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

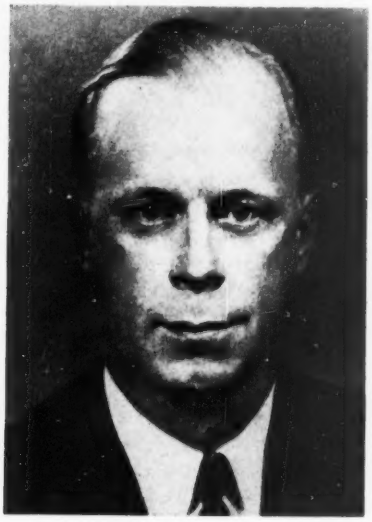
For complete information and technical assistance, call Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal industrial centers.

Heppenstall

—the most dependable name in forgings

Men of Industry

D. R. STROUSE
. . . Tube Reducing production mgr.



JEROME OTTMAR
. . . Metals & Controls v. p.

GORDON W. SMITHSON
. . . chief engineer at Potter & Johnston

Tube Reducing Corp., Wallington, N. J., appointed **D. R. Strouse** production manager. He joined the company in January, 1953, and has served in an engineering capacity. He formerly was head of production control at Morse Twist Drill & Machine Co. where he served from 1946 to 1951, at which time he was recalled for service with the U. S. Navy.

Carl H. Morken, formerly works manager, was promoted to vice president in charge of manufacturing at **Kennedy Valve Mfg. Co.**, Elmira, N. Y. **Thomas S. Turkington,** controller, was given the additional duties of secretary. Prior to joining Kennedy in 1952, Mr. Morken was plant manager for Donovan Inc.

Kaiser-Frazer Sales Corp., Willow Run, Mich., elected **Roy Abernethy** as vice president and general sales manager. Associated with Packard Motor Car Co. since 1925, he has been assistant general sales manager there for the last two years.

Foster D. Snell Inc., New York, promoted **Walter L. Hardy** to director of engineering.

J. Ralph Tschantz was appointed export sales manager, **Flxible Co.**, Loudonville, O.

Metals & Controls Corp., Attleboro, Mass., elected **Jerome Ottmar** vice president. He has been manager of engineering and sales in the General Plate Division. In addition, he is sales promotion manager for Spencer Thermostat Division.

Herbert E. White is the new president of **Cleveland Hardware & Forging Co.**, Cleveland. He succeeds **A. J. Sanford,** now chairman of the board. **Louis X. Schmidt** was elected vice president in charge of production and **Charles Hall** was named secretary. Mr. White has been with Lincoln Electric Co. for the last 19 years, since 1946 serving as chief industrial engineer.

David MacGregor, chief engineer, **Edward Valves Inc.**, has been assigned additional duties of works manager of the East Chicago, Ind., company, subsidiary of Rockwell Mfg. Co.

The following five general managers of operating divisions of **International Harvester Co.**, Chicago, have been elected vice presidents: **H. T. Reishus,** industrial power division; **Eugene F. Schneider,** farm implement division; **Harry O. Bercher,** steel division; **William C. Schumacher,** motor truck division; and **Mark V. Keller,** farm tractor division.

Gordon W. Smithson was promoted by **Potter & Johnston Co.**, Pawtucket, R. I., to chief engineer. He will direct all product improvement, engineering and research, both mechanical and electrical, on Potter & Johnston machine tools.

Baldwin-Lima-Hamilton Corp., Eddystone, Pa., elected **J. F. Connaughton** vice president in charge of the Eddystone division. He formerly was general manager, Hamilton division. **Perry A. White,** formerly controller of both divisions, was elected general controller of the company to succeed **W. Raymond Parshall,** resigned. **George E. Mathews** was made controller, Eddystone division and **S. F. Schrichte** of the Hamilton division.

Matthew A. Carpenter, formerly executive vice president, **Falk Corp.**, Milwaukee, was elected chairman of the executive committee. Other promotions include **Harold F. Falk** to executive vice president; **Louis W. Falk,** vice president-manufacturing; and **Walter P. Schmitter,** vice president and chief engineer.

L. E. Brown was appointed Detroit district sales manager, Reliance Division, **Eaton Mfg. Co.** He succeeds the late **H. R. Hanna.** New sales engineers for the division are **William R. Chandler,**

A. A. THROCKMORTON
. . . Kaiser Aluminum alloys div. mgr.

DR. JOHN O. TAYLOR
. . . heads ATF's research dept.

GEORGE H. DEIKE Jr.
. . . a v. p. of Mine Safety Appliances

Tom L. Hunter and **William McCormick**.

Associated with **Kaiser Aluminum & Chemical Sales Inc.**, Oakland, Calif., since 1947, **A. A. Throckmorton** was promoted to alloys division manager in charge of sales for primary pig, ingot and billet products and special foundry ingot. He will have his headquarters in Chicago.

Briggs Mfg. Co., Detroit, elected **George W. Drysdale** vice president and assistant to the president. His former position of vice president in charge of manufacturing was filled by appointment of **Joseph D. Quinn**. Vice President **Fred W. Hofmann** was elevated to executive vice president. **A. D. Blackwood**, former secretary-treasurer, was elected vice president-finance. Position of treasurer is filled by **Daniel J. Convery**, and that of secretary by **David B. Hinchman**. Other appointments include **Dean Clark** as assistant manufacturing manager and **William R. Fannin** and **Glen A. Prosser** as assistant treasurer and assistant secretary, respectively.

Dr. John O. Taylor was named director of research for **American Type Founders**, Elizabeth, N. J. He formerly was with John O. Taylor & Associates, graphic arts consultants.

Robert J. Kay was appointed sales manager, merchant trade products, **Northwestern Steel & Wire Co.**, Sterling, Ill.

CDC Control Services Inc., Hatboro, Pa., appointed **Karl W. Peterson** director of field engineering.

Mine Safety Appliances Co., Pittsburgh, elected **George H. Deike Jr.** as a vice president. He joined the company's engineering department in 1931 and since 1951 has been director of engineering and secretary of the company.

Personnel changes in **Jones & Laughlin Steel Corp.'s** sales departments include: **W. L. Wolfe**, made assistant to vice president sales; **L. B. Rainey**, now assistant manager-tubular products (oil country goods); **R. H. Martin**, assistant manager-tubular products (merchant pipe); **K. M. Boyd**, assistant manager, order department; **R. C. Miller Jr.**, now assistant manager of sales-sheet and strip products; **S. H. Strohm**, manager of sales-electricweld tube division; **H. N. Scott**, salesman, electricweld tube division; **E. R. Nelson**, assistant district sales manager, Cleveland and **T. M. Hogan**, salesman, Detroit.

Barrett-Cravens Co., Chicago, elected **A. M. Barrett Jr.** president to succeed his father, **A. M. Barrett Sr.**, who becomes chairman.

James B. Kelly was appointed vice president, **McCloskey Co.**, Pittsburgh. He most recently was president of Mellon-Stuart Co.

Roderick D. MacDonald is general sales manager, **Weatherhead Co. of Canada Ltd.**, St. Thomas, Ont.

William K. Meyers, for many years regional sales manager in Chicago for **Bassick Co.**, Bridgeport, Conn., was elected executive vice president. He succeeds **Walter F. Herold**, who was named a vice president of the parent corporation, Stewart-Warner Corp., Chicago.

Named to new posts in **General Electric Co.'s** meter and instrument department at Lynn, Mass., are: **Arthur L. Carvill**, manager of electric utility field sales; **Bruce B. Gravitt**, manager of meter and time switch sales; **James A. Yunker**, manager of instrument transformer sales; and **Ralph W. Drayer**, manager of time switch sales, reporting to Mr. Gravitt.

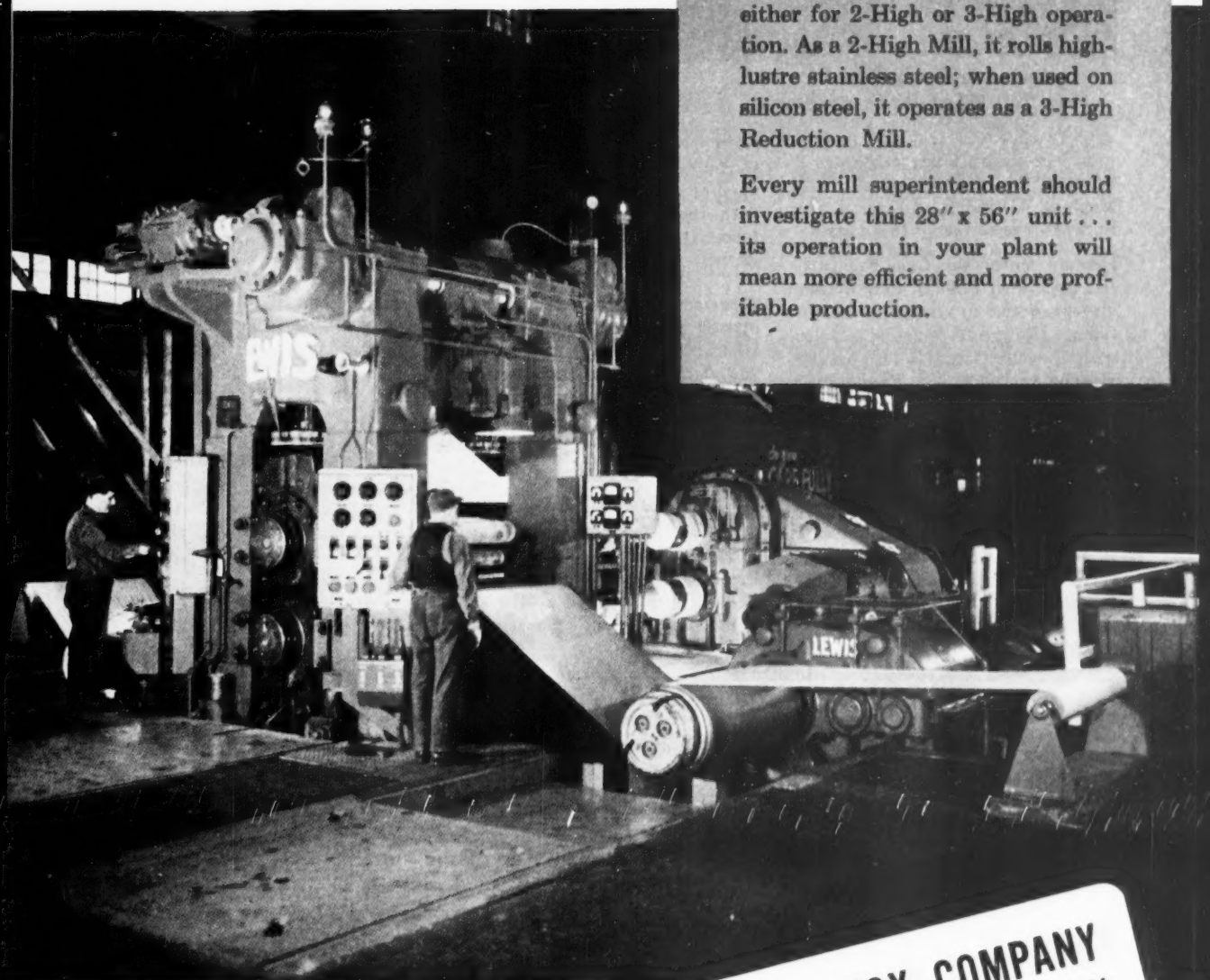
Richard Crabb succeeds **L. D. Draper**, retired, as works engineer of the Bethlehem, Pa., plant of **Bethlehem Steel Co.** Mr. Draper served in that position for 27 years.

Two vice presidencies, designated general corporate officers, were created by **Stewart-Warner Corp.**, Chicago. The office of vice president for foreign operation is filled by **James E. Burke**, and **William W. Miller** fills the position of vice president, industrial relations and legal. Additional vice presidencies in the divisional management group are: **David C. Peterson**, director of engineering and manufacturing, Division I; **Lynn G. Vanderhoof**, general manager, Stewart Die Casting Division; **Walter F. Herold**, who relinquishes duties of executive vice president of the subsidi-

Easily Converted from 2-High to 3-High
NEW LEWIS MILL
Rolls Stainless Steel and Silicon

Installed for one of the nation's largest special steel producers, this new LEWIS Mill can be set up either for 2-High or 3-High operation. As a 2-High Mill, it rolls high-lustre stainless steel; when used on silicon steel, it operates as a 3-High Reduction Mill.

Every mill superintendent should investigate this 28" x 56" unit . . . its operation in your plant will mean more efficient and more profitable production.



Photograph courtesy Allegheny Ludlum Steel Corporation

BLAW-KNOX COMPANY
LEWIS MACHINERY DIVISION
PITTSBURGH 22
PENNSYLVANIA

BLAW-KNOX

PAUL C. FUNKHOUSER
. . . Henney Motor v. p.-operations

W. A. HERPICH
. . . Galion Allsteel mfg. manager

A. W. PLIER
. . . heads D. J. Murray Mfg.

ary, Bassick Co., to become vice president-engineering; and **Carl J. Winkler,** general manager, U. S. Machine Division, acquired by Stewart-Warner early this year.

Henney Motor Co. Inc., Freeport, Ill., appointed **Paul C. Funkhouser** vice president in charge of operations. He has 25 years of service with Chrysler Corp. Before joining Henney in 1952, Mr. Funkhouser was on the staff of the vice president and general manager of Plymouth Division as a consultant on production engineering.

Louis H. Niebling, former director of controlled materials in **Midwest Piping Co.'s** home office, St. Louis, was made manager of the Chicago district sales office. **Walter Janesch** was made assistant to Mr. Niebling.

Galion Allsteel Body Co., Galion, O., appointed **W. A. Herpich** manager of manufacturing. Affiliated with the company since 1946, he formerly was chief production engineer.

American Machine & Foundry Co. opened a development engineering laboratory in Greenwich, Conn., and named **H. A. Oldenkamp** director and **R. A. Kimes** manager. They were formerly chief engineer and assistant chief engineer, respectively, of AMF's Brooklyn plant.

Clarence J. Johnson, corporate secretary of American Machine & Foundry Co., New York, was elected secretary and a director of **Thompson-Bremer & Co.,** Chicago, subsidiary.

A. W. Plier was named president and general manager of **D. J. Murray Mfg. Co.,** Wausau, Wis. He succeeds **F. C. Boyce,** now chairman of the board.

Ewald Carlson was named assistant superintendent of the electric weld pipe mill, and **Carl W. Ludwig** was promoted to assistant superintendent of soaking pits and blooming mill, Fontana Works, **Kaiser Steel Corp.,** Fontana, Calif.

C. S. Ferguson was appointed director in charge of engineering for **Marshall-Eclipse Division,** Bendix Aviation Corp., Green Island, N. Y.

Charles W. Ginsberg was named president, **Babcock Printing Press Corp.,** Canton, O.

OBITUARIES...

Amos Bowman, 58, vice president, **Luria Bros. & Co. Inc.,** and manager of its Pittsburgh office, died May 29. He had been associated with Luria Bros. since 1916.

J. Frederick Rogers, 52, president, **Beals, McCarthy & Rogers Inc.,** Buffalo, died May 31. A week before his death, Mr. Rogers was elected vice president of American Steel Warehouse Association at the organization's 44th annual convention in Washington. He was president of the association in 1937-38. and continued active in its affairs.

Walter J. Habermann, 49, vice president-sales, **Milwaukee Stamping Co.,** Milwaukee, died May 22.

Cyril Tasker, 54, director of the research laboratory of **American Society of Heating & Ventilating Engineers** in Cleveland, died May 27.

George J. Zimmerman, 69, president, **Strong, Carlisle & Hammond Co.,** Cleveland, before he retired in 1947, died May 31. His retirement terminated a career of 46 years with the company.

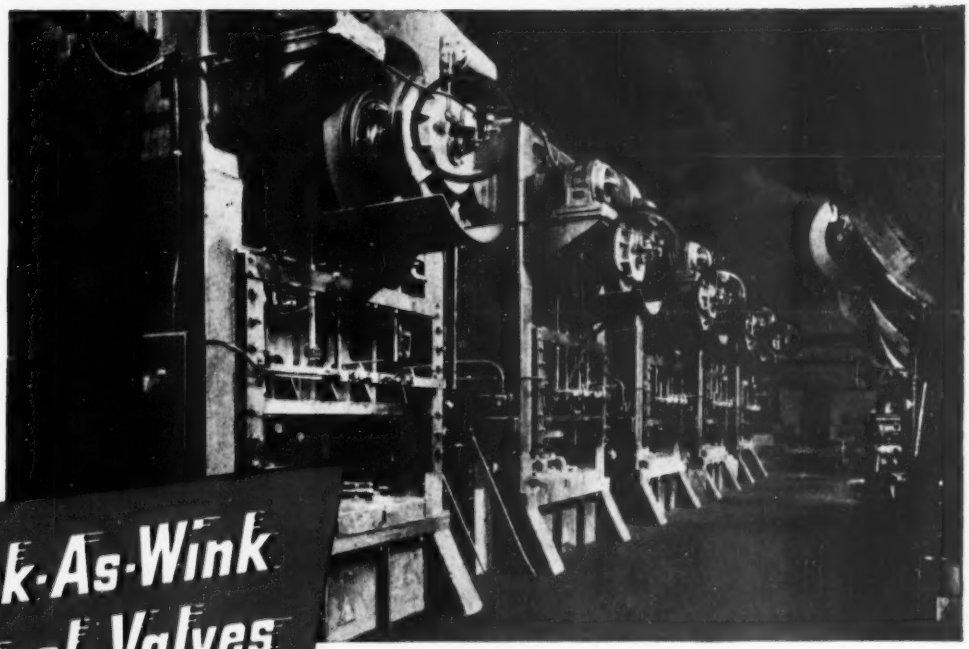
Ralph K. Logan, 54, chief metallurgist and production manager, **Cuyahoga Steel & Wire Co.,** Cleveland, died May 20.

Howard W. Matthews, 55, vice president, **Turbo Machine Co.,** Lansdale, Pa., died May 26.

L. D. Rigdon, 67, consultant to the manufacturing vice president of **Westinghouse Electric Corp.,** Pittsburgh, died May 24.

Michael J. Connolly, 67, foundry superintendent, **Pratt & Letchworth Co. Inc.,** Buffalo, died May 27.

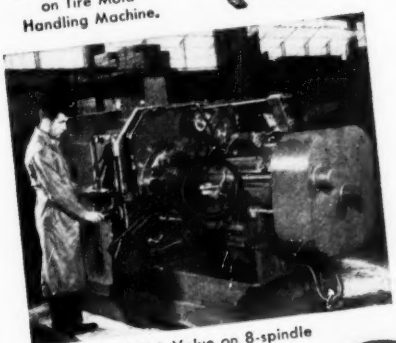
Frederick H. M. Hart, 77, vice president, **Daystrom Electric Corp.,** Poughkeepsie, N. Y., died May 24.



Quick-As-Wink Solenoid Air Valves on Battery of Heavy Duty Presses.

Quick-As-Wink Control Valves

Quick-As-Wink Valves on Tire Mold Handling Machine.



Quick-As-Wink Valve on 8-spindle Automatic Chucking Machine.

proven dependable performance that keeps you out of "post-mortems"

● The easiest and surest way of preventing break-downs, repair costs, material spoilage, machine damage, operator injury, lost production, customer ill-will — and their "post-mortems", is to install Quick-As-Wink Valves on *all* your air and hydraulic controls.

Positive and fast acting, every valve is designed and built to meet the most exacting requirements and individually tested before being shipped. All operating parts are in pressure balance eliminating any tendency to creep or crawl. Danger of "repeating" — major cause of accidents, break-downs and other trouble — is practically eliminated. Most foremen and superintendents know there's nothing better, for long, dependable, trouble-free service than Quick-As-Wink Control Valves. Can you afford to gamble with less?

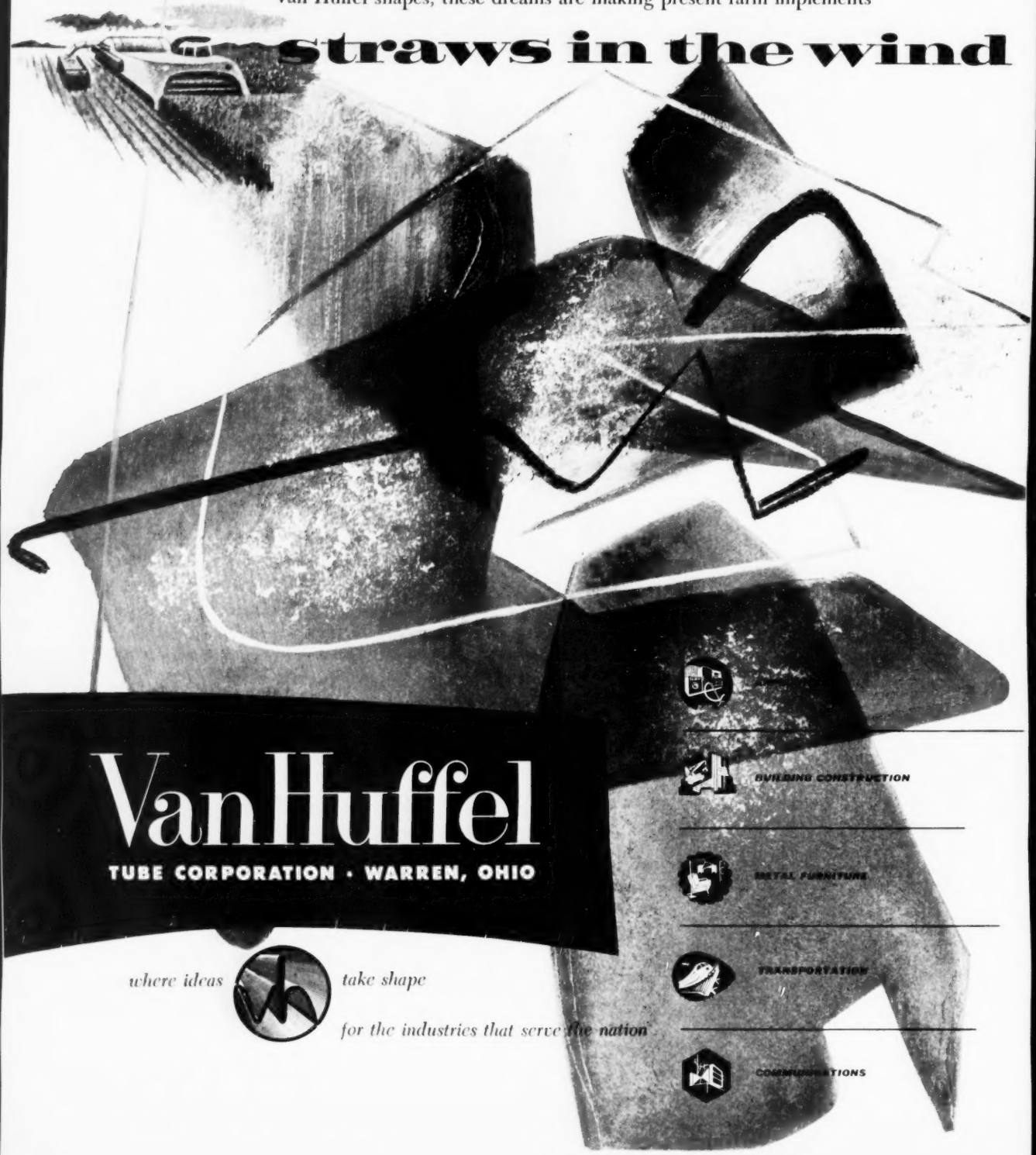
Quick-As-Wink
AIR AND HYDRAULIC
Control Valves

Hand, Foot, Cam, Diaphragm and Solenoid Operated

Mfd. by C. B. HUNT & SON, INC., 1911 East Pershing St., Salem, Ohio

Only an imaginative "let's look ahead" attitude toward new materials and production techniques made possible today's amazing farming methods and equipment. For example, take some of the "impossible" shapes we cold form daily from all kinds of metals, in any lengths and for an ever growing list of farm applications. Yesterday, these applications were but drawing board dreams. Today, thanks to alert design engineers who are exploiting the economic and functional possibilities of Van Huffel shapes, these dreams are making present farm implements

straws in the wind



Van Huffel

TUBE CORPORATION · WARREN, OHIO

where ideas *take shape*

for the industries that serve the nation

BUILDING CONSTRUCTION

METAL FURNITURE

TRANSPORTATION

COMMUNICATIONS

Axle, Spring Firms Merge

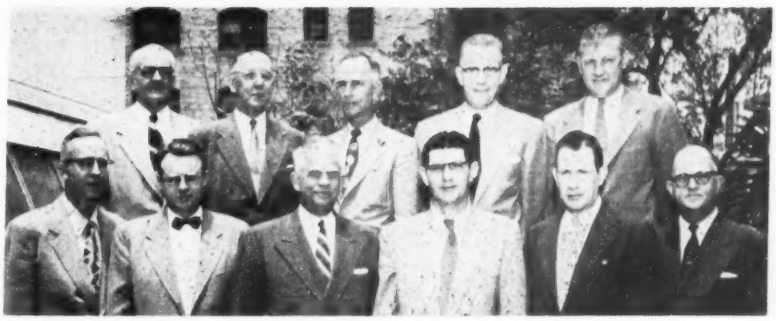
Consolidation of Timken-Detroit Axle Co. and Standard Steel Spring Co. is approved

MERGER of Timken-Detroit Axle Co., Detroit, and Standard Steel Spring Co., Coraopolis, Pa., has been voted by directors of these companies.

The consolidated firm will be known as Rockwell Spring & Axle Co. and will offer a broad line of products to automotive, farm equipment and other customers. Timken-Detroit makes auto axles, gears, etc., while Standard makes auto bumpers and leaf springs, iron and steel flooring, gratings, stair treads, etc. Sales of the combined companies in 1952 were $388,534,833. As of Mar. 31, combined total assets were $154,859,820; combined net working capital, $71,268,994.

The company will operate 21 plants located in Michigan, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin, New Jersey, New York and California.

Willard F. Rockwell, chairman of both of the consolidating firms, will be chairman of Rockwell Spring & Axle Co.; Robert C. Enos, president of Standard Steel Spring, will be president and chief executive officer. Walter F. Rockwell, president of Timken-Detroit, will retire to devote himself to private business interests.



Purchasing Agents Elect Executive Committee

Members of the executive committee, elected by National Association of Purchasing Agents at their annual convention in Los Angeles, are shown above. Reading from left to right, front row: G. W. Howard Ahl, Philip Morris & Co. Ltd. Inc., New York; H. Randall Smart Jr., Standard Nut & Bolt Co., Valley Falls, R. I.; H. W. Christensen, Columbia-Geneva Steel Division, U. S. Steel Corp., San Francisco; E. F. Andrews, Pitman-Moore Co., Indianapolis; A. W. Baldock, Globe Machinery & Supply Co., Des Moines, Iowa; George R. Bosworth, city of New Orleans. In the back row are: L. G. Wiseley, Michigan Consolidated Gas Co., Detroit; John Crawford, Sun Life Assurance Co. of Canada, Montreal; John Rieves, Southwestern Gas & Electric Co., Shreveport, La.; W. C. Allen, Utah Power & Light Co., Salt Lake City, Utah; W. R. Lantz, Sun Rubber Co., Barberton, O.

Bedford Foundry Enlarges Plant

Bedford Foundry & Machine Co. completed an addition to the overhead crane fabrication and erection floor of its plant in Bedford, Ind. This more than doubles the firm's crane building capacity.

Metal Carbides Opens Offices

Metal Carbides Corp., Youngstown, opened sales offices at 325 Bankers Trust Bldg., Indianapolis, and at 743 N. Fourth St., Milwaukee. The company appointed as resident sales engineers: Frank C. Thompson Jr., Indianapolis; Charles Roman, Milwaukee; Fred Winter Jr., Boston.

American Welding Expands

American Welding & Mfg. Co., Warren, O., manufacturer of welded products added 18,200 sq ft of space to its plant in that city. The fabricating contract was placed with Luria Engineering Co., Bethlehem, Pa., general contractor was Campbell Construction Co., Warren; and erector, Diamond Steel Construction Co., Youngstown.

General Refractories Expands

General Refractories Co., Brooklyn, Md., is erecting plant addition. Charles H. Hoover is manager.

Offers Imported Aluminum

Ufalex, Paris, appointed International Selling Corp., New York, as its exclusive agent for the distribution of its aluminum products for the North American continent. Ufalex is the export agency in France for a group of aluminum rolling and extruding mills.

Enthone Completes Project

Enthone Inc., New Haven, Conn., manufacturer of chemicals for the metal finishing industry, completed expansion of its manufacturing and warehousing facilities at its plant in that city.

Firth Sterling Names Agents

Firth Sterling Inc., Pittsburgh, appointed as distributors: Topping Bros., New York; C. H. Tiebout & Sons Inc., Brooklyn, N. Y.; Tool Crib Inc., Minneapolis; Franeil Inc., Scranton, Pa.; Cleveland Carbide Sales Co., Wickliffe, O.; Sterling Sales Inc., Worcester, Mass.; Mosher Industrial Supply Co., Chicopee, Mass.; Sterling Products Inc., Chicago.

Equips Nonferrous Foundry

Central Pattern Works, Baltimore, manufacturer of wood and metal patterns, is equipping a nonferrous foundry at 47 West St., that city. Two gas-fired melting furnaces are being installed. Leroy Groh is partner.

Alcoa Forms Mining Division

Alcoa Mining Co., Houston, a wholly-owned subsidiary of Aluminum Co. of America, Pittsburgh, was liquidated to simplify the parent company's corporate structure. The subsidiary's operations were transferred to a newly-created Mining Division. Alcoa Mining has been engaged in mining bauxite and other minerals, including fluorspar and limestone, and in the production of natural gas and petroleum in Texas.

Union Spring Buys Business

Union Electric & Mfg. Co., Newark, N. J., purchased from Union Spring & Mfg. Co., New Kensington, Pa., the assets of the latter's Jersey City Division only, consisting of all of the machinery, equip-

• Here's how a prominent steel company recently eliminated a real "time-waster" in its operations. Finished flat stock was not lifted out of the way fast enough . . . resulting in excessive downtime on a large milling machine.

A READING engineer was called in to analyze the situation. Following his recommendation, a CUSTOM BUILT hoist and crane, with an extra-long lift and *push button control of all motions*, was engineered and installed by READING. Now, finished stock is handled faster . . . production is smoother . . . and *only one man* is required to do the job. Maintenance time and dollars are cut because any unit can be removed for overhaul or repair without dismantling other units.

The engineering of special handling systems to fit *any* job is standard practice with READING. For full details on how you can save money with a "tailor made" READING CRANE, just drop us a line today.

Reading Crane & Hoist Corporation, 2102 Adams Street, Reading, Pa.

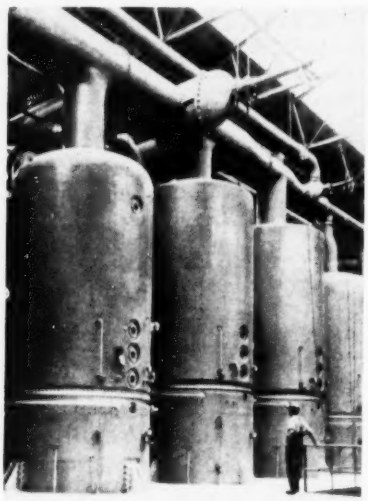
READING CRANES

CHAIN HOISTS | OVERHEAD TRAVELING CRANES | ELECTRIC HOISTS

ment and inventory located at 1057 Summit Ave., Jersey City, N. J. Operation of the New Kensington Division of Union Spring will be continued.

Cleaver-Brooks Granted Rights

Broad sales and manufacturing rights for the North American continent were granted Cleaver-Brooks Co., Milwaukee, by Escher Wyss Co., Zurich, Switzerland. Cleaver-Brooks produces boilers,



distillation equipment, industrial oil and gas burners and bituminous heaters. A wholly-owned subsidiary, Michael Yundt Co., Waukesha, Wis., is actively engaged in the manufacture of bottle washers and pasteurizers.

Cleaver-Brooks built the vapor compression evaporator, shown in the accompanying picture, which has a capacity of 250,000 lb per hour. Piping is arranged in this installation to permit use as triple effect steam evaporator if desired.

In anticipation of expanded production, Cleaver-Brooks is pressing new construction at its main plant in Milwaukee to ready about 50,000 sq ft of factory space and extensive tooling to handle manufacture of the new lines. Escher Wyss products include turbines, pumps, compressors, heat exchange apparatus and evaporation equipment.

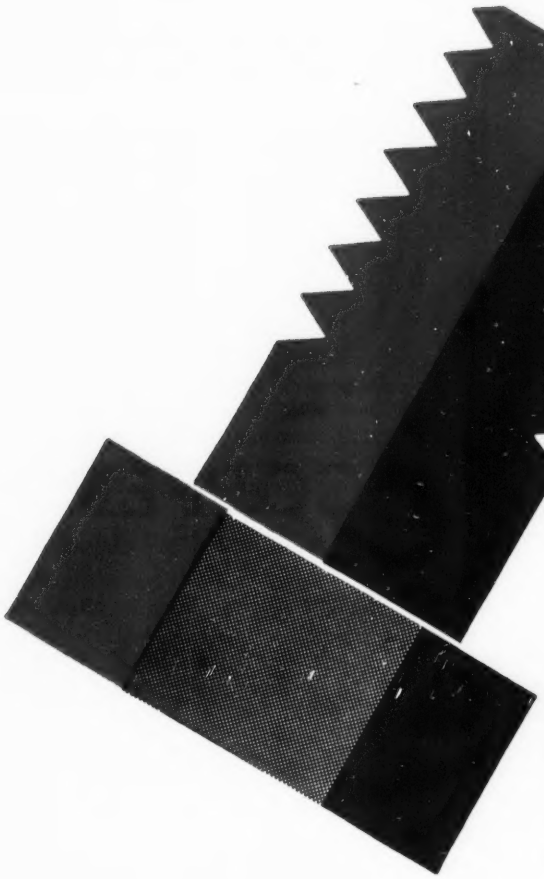
Allis-Chalmers Appoints Agents

Allis-Chalmers Mfg. Co., Milwaukee, appointed as distributors for its pumps: Louis Montagnon Inc.,

Here at Sterling Bolt Co., a single, integrated **DEPENDABLE** source can supply you with more than **200,000** stock and standard sizes in Bolts, Nuts, Screws and Washers for your specific needs.

For more than 35 years Sterling Bolt has been a prime supplier of metal fastenings to America's best-known companies—because Sterling facilities combine both warehouse and mill, giving you advantages of **PROMPT SERVICE** and **COMPETITIVE DISCOUNTS.**

try these for SIZE



THE INDUSTRIES WE SERVE—AND SERVE WELL!

Refrigeration • Pumps • Cranes • Elevators • Tractors • Trailers • Conveyors • Mining Equipment • Blower & Fan Equipment • Diesel Engines • Bodies—Motor Truck & Trailer • Electrical Manufacturing • Air Conditioning • Material Handling Equipment • Machinery Manufacturing • Radio & Television • and many others—

Interested in Cutting Costs?

No need to count on expensive, time-consuming specials when Sterling Bolt Standardized Bolts, Nuts and Screws can fit your job—200,000 to one!

Send your inquiry or order TODAY—to the

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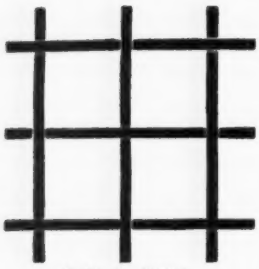
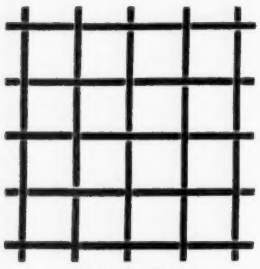
Telephone: SUperior 7-3000 • Teletype:CG 488

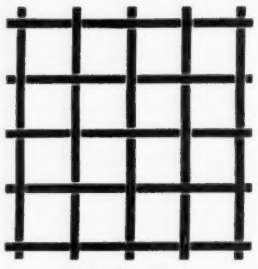
Offices: Cincinnati, Indianapolis, Milwaukee, St. Louis



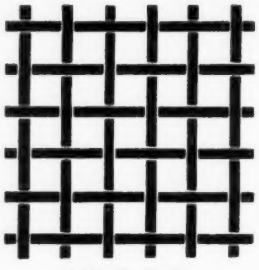
2 Mesh .063"
76.4% Open Area



3 Mesh .041"
76.7% Open Area

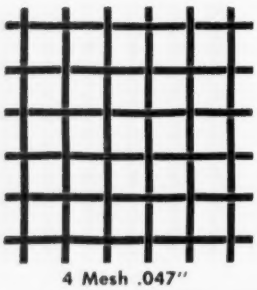


3 Mesh .054"
70.1% Open Area

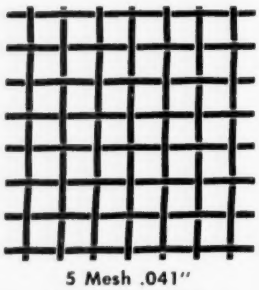


4 Mesh .063"
56.0% Open Area

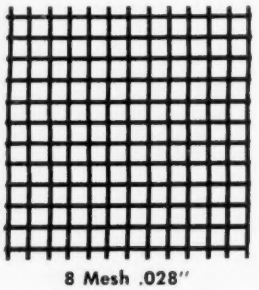
CALL CHASE



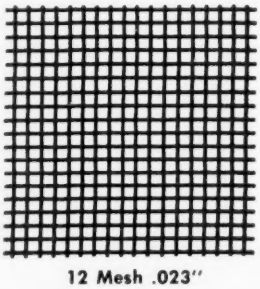
4 Mesh .047"
65.9% Open Area



5 Mesh .041"
63.2% Open Area

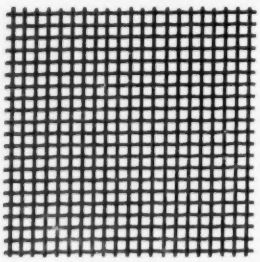


8 Mesh .028"
60.2% Open Area

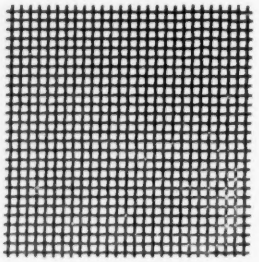


12 Mesh .023"
51.8% Open Area

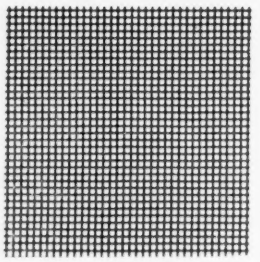
FOR INDUSTRIAL WIRE CLOTH



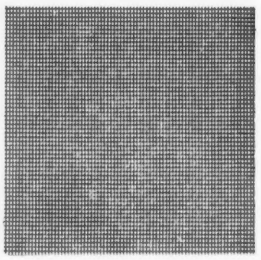
14 Mesh .020"
51.0% Open Area



18 Mesh .017"
48.3% Open Area



24 Mesh .0135"
45.8% Open Area



50 x 40 Mesh .009"
35.7% Open Area

IN BRASS AND COPPER

From coarse wire cloth for window or door grilles . . . right down to extra-fine mesh for food preparation, call Chase.

Double crimped wires of Chase Wire Cloth keep openings square and true . . . mesh uniform. It is woven in a mill which specializes in weaving brass, copper and copper-alloy wire cloth. The result is *quality*.

For information on the size and type wire cloth you need, send for free book or call your nearest Chase warehouse.

Chase

BRASS & COPPER

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The Nation's Headquarters for Brass & Copper

Albany†	Chicago	Denver†	Kansas City, Mo.	Newark	Pittsburgh	San Francisco
Atlanta	Cincinnati	Detroit	Los Angeles	New Orleans	Providence	Seattle
Baltimore	Cleveland	Houston	Milwaukee	New York	Rochester†	Waterbury
Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(†sales office only)

Pleasantville, N. Y.; R. & R. Supply Co. Inc., Orlando, Fla.; Tri-State Air Conditioning Division, R. H. Kyle & Co., Charleston, W. Va.

Oh, My Back!

DIG those crazy computers!

This is typical "be-bop" reaction to engineering talk when it comes to naming computing machines. Computers bear such "gone" handles as OMIBAC, WAC, SWAC, MANIAC, EXRAC, OARAC, EDVAC, REAC, ENIAC, UNIVAC and ELECOM.

The engineers' "cool" touch in labeling these computers, which figure out in seconds problems that would take men years to solve, is only coincidence. Most of the names are derived from first letters of words. General Electric Co.'s computer, OMIBAC, has nothing to do with backache; it comprises first letters for "Ordinal Memory Inspecting Binary Automatic Computer."

Kurt Orban Names Distributor

Kurt Orban Co. Inc., New York, appointed Miner Machine Co., Denver, distributor in that territory of the company's line of German-made machine tools.

Rodale Opens Warehouse

Rodale Mfg. Co. Inc., Emmaus, Pa., opened a warehouse at 1157 W. Grand Ave., Chicago. The company makes electrical wiring devices and interlocking connectors.

Douglas Builds Testing Building

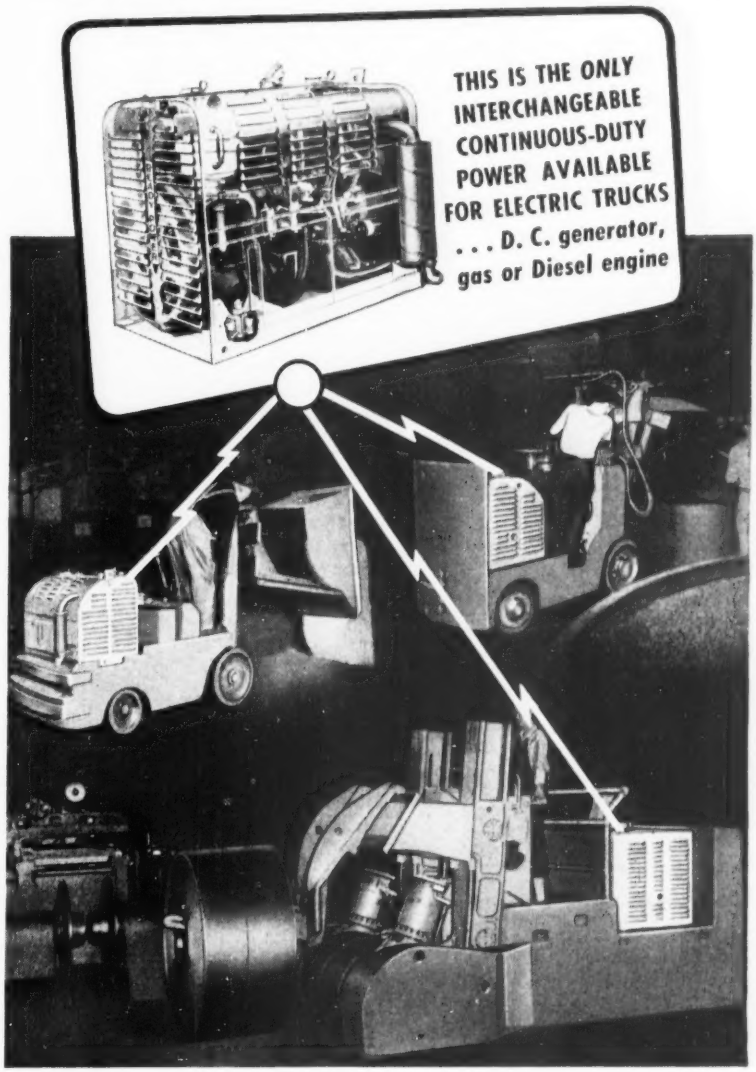
Douglas Aircraft Co. Inc., Santa Monica, Calif., is building an electronics testing building at its Long Beach, Calif., plant. The building is slated for completion by Sept. 30.

Stonco Acquires Lighting Line

Stonco Electric Products Co., Kenilworth, N. J., purchased the Lighting Products Division of M. B. Austin Co., Northbrook, Ill. All manufacturing of cast aluminum

(*Please Turn to Page 82*)

Ready-Power Adds 'GUTS' to Electric Truck Performance


THIS IS THE ONLY INTERCHANGEABLE CONTINUOUS-DUTY POWER AVAILABLE FOR ELECTRIC TRUCKS . . . D. C. generator, gas or Diesel engine

Only Ready-Power Drive gives electric trucks the stamina that means *full power all the time!* With no limit to hours of service, Ready-Power-equipped trucks handle the toughest jobs at lowest costs per ton-mile. Gas-electric and Diesel-electric models are available for ALL sizes of electric trucks.

CONTINUOUS-DUTY POWER UNITS

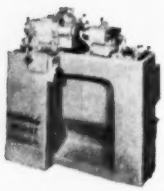
Remember... Your Truck Is No Better Than Its Power!

The READY-POWER Co.

3824 Grand River Ave., Detroit 8, Michigan

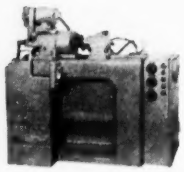
Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

bryant
internal grinding



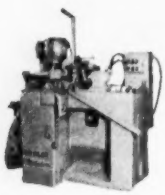
no. 1309-W

Finishes 2 bores and a taper straight and concentric. 2 wheelheads are used on this semi-automatic. Max. traverse stroke, 6". Max. grinding length, 3½".



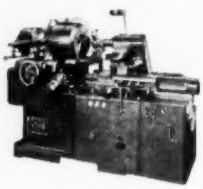
no. 1109

For high production of small bores where accuracy of size and finish are required. Max. traverse stroke, 6". Max. grinding length, 3½".



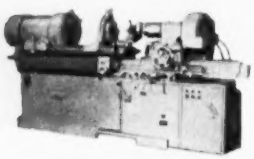
no. 2209

For precision and high production grinding of ball bearing races, gears, rolls, bushings, etc. Max. traverse stroke, 6". Max. grinding length, ¾".



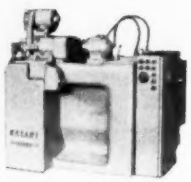
no. 1116

A general purpose hole grinder for tool room, small shop, or general production. Maximum traverse stroke, 20". Maximum grinding length, 8".



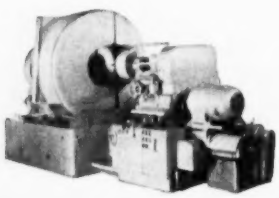
no. 1416

Specially designed for grinding bores in long work, such as machine tool spindles. Maximum traverse stroke, 20". Maximum grinding length, 8".



no. 1209

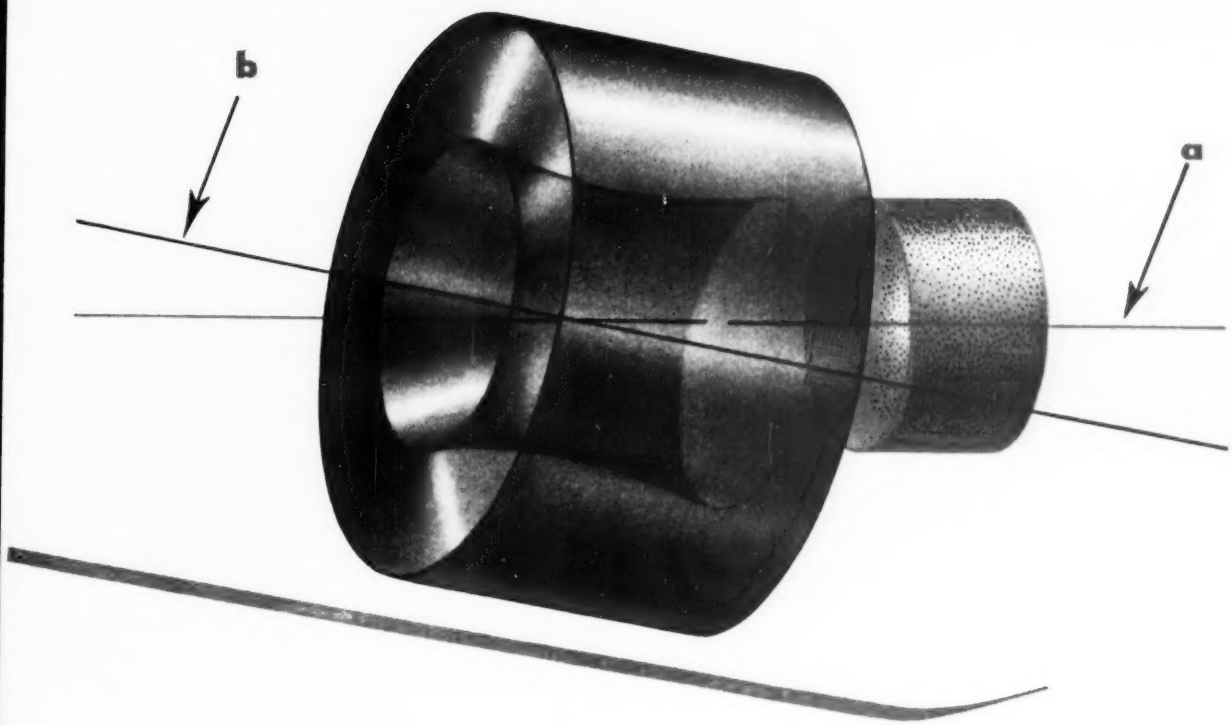
A fully automatic, high production machine for small and medium bore grinding. Max. traverse stroke, 6". Max. grinding length, 3".



no. 1460

For production or single piece hole grinding on parts up to 60" diameter. Max. traverse stroke, 21". Max. grinding length, 16".

"Alignment for Better Internal Grinding", a new, sound color moving picture is available for free showing to engineering groups. Write for descriptive booking form.



BELL mouth holes are a common internal grinding error. General available information advises simply turning the workhead or changing the length of traverse to correct this error, to generate a straight hole. In the case illustrated above, where bell mouth exists on both ends of the hole, either turning the workhead or changing the length of stroke will improve the shape of the hole but will not correct the error. In the illustration, the work axis "b" is tipped out of alignment with wheel and wheel path axis "a". When the wheel, moving on axis "a", traverses the front of the hole, it grinds above the work center line and the front of the hole will be oversize. As the wheel traverses the center of the hole, the hole will be smaller. As the wheel traverses the back of the hole, it grinds below the center line and the hole will again be oversize. While the wheel contact may be a full line, it will not be parallel to the axis of the work.

The only possible remedy is to correct the alignment of the workhead axis "b" so that it will be parallel with the wheel and wheel path axis "a". Wheel wear will be uniform but, most important, the geometry of the hole will be correct.

Bryant internal grinders are engineered to permit adjustment which will bring the workhead into proper alignment.

Bryant Chucking Grinder Company

Springfield, Vermont, U. S. A.

Internal grinders • Internal & External thread gages

floodlights, spotlights, cluster lights and accessories has been transferred to the Kenilworth factory.

Hallowell Gets NMTA Award

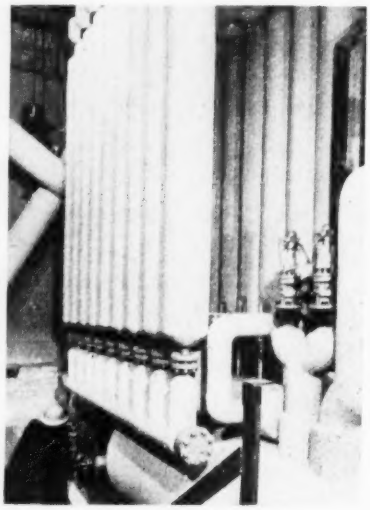
Annual achievement award of National Metal Trades Association, Chicago, for individual and corporate leadership in industrial relations was given to H. Thomas Hallowell Jr., president, Standard Pressed Steel Co., Jenkintown, Pa.

McCulloch Motors Buys Plant

McCulloch Motors Corp., Los Angeles, acquired Surface Alloys Inc.'s plant at 5855 West 98th St., that city. The plant will become the McCulloch Motors plating department.

Grinding Wheel Firm Expands

Electro Refractories & Abrasives Corp., Buffalo, having completed a plant addition, is preparing to resume large scale output of vitrified grinding wheels, vice president George B. Michie announces. Because of limited facilities, the corporation dropped this production during World War II.



AEC Gets Generator

Steam generator shown above was developed at Argonne National Laboratory, Chicago, for use with the experimental breeder reactor. Its unique design prevents mixing of the reactor's alkali metal coolant and water which, in contact, react violently

Boiler Firm Opens Branch

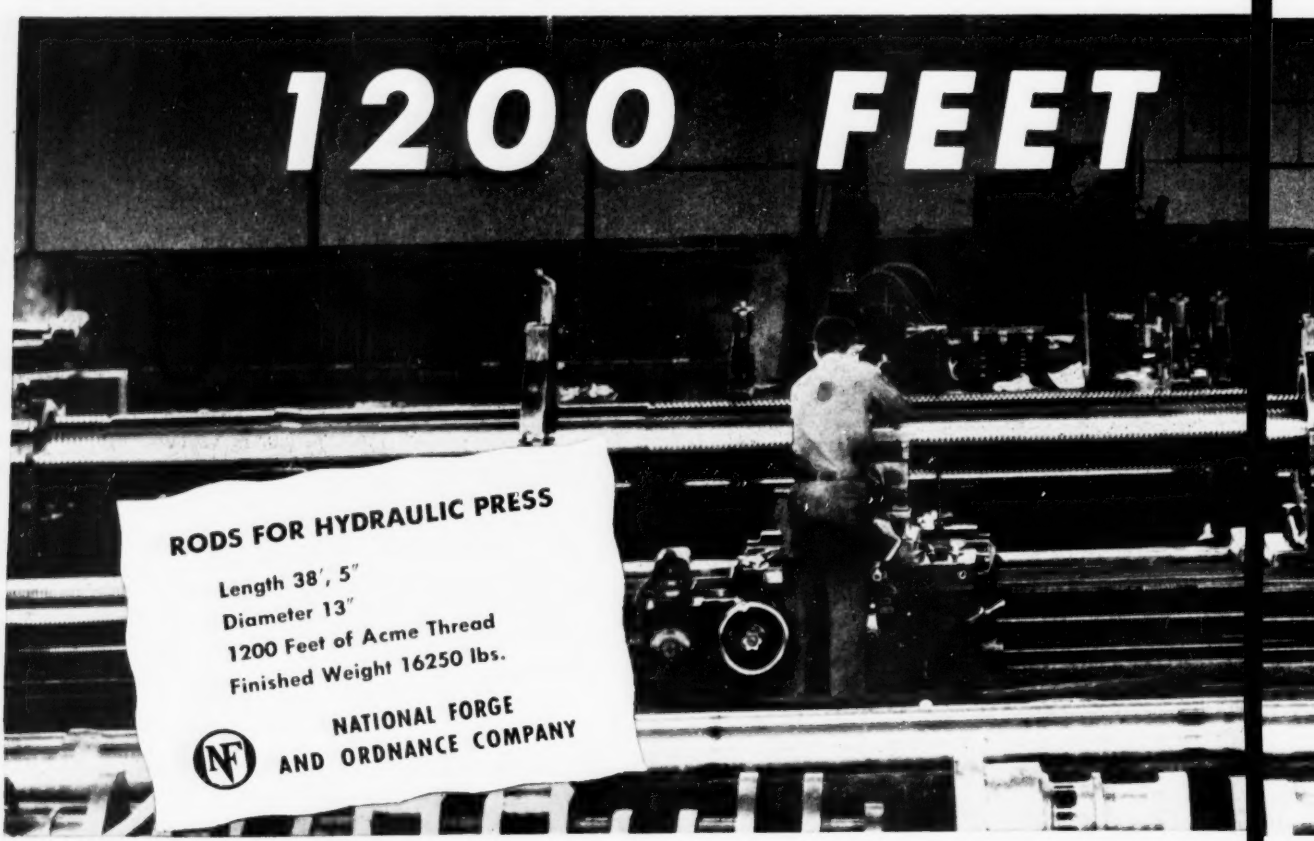
Orr & Sembower Inc., Reading, Pa., manufacturer of packaged automatic boilers, opened a branch office at 51 E. 42nd St., New York. Jared Darlington III is district manager. The company appointed C. A. Breed Inc., West Newton, Mass., as its representative in the Boston area.

Plans $400,000 Parts Depot

Standard Motor Co. of Canada will erect a $400,000 parts depot and offices in Toronto, Ont., to handle its introduction to the Canadian market of an English sports car.

Production Pool Organized

A small business production pool was organized by 15 firms engaged chiefly in the metalworking trades in Albuquerque, N. Mex. Albuquerque Production Pool Inc., 302½ Central Ave., will seek work in the fields of metal machining, fabrication, combined metal and



wood fabrication, plating, welding and electronics fabrication and assembly. Members of the pool are: Acoma Corp., Albuquerque Precision Tool & Die, Anderson Mfg. Co., Benischek Mfg. Co., W. L. Childers Welding & Machine Works, Consolidated Machine & Supply Co. Ltd., Crown Engineering, Caddis Machine Works, HuStone Engineering, Machine Engineering Corp., M & F Equipment Co., Mallow Plating & Mfg. Works, Quality Wood Shop, Troy's Welding Shop, all of Albuquerque; Sun Country Industries, Alameda, N. Mex.

Revere Installs Furnace

Revere Copper & Brass Inc. is installing a 30,000 lb capacity gas-fired reverberatory furnace for melting and casting aluminum at its Canton, Md., Works.

Electronics Firm To Build

Marine Electronics Inc., Baltimore, manufacturer of electrical specialties and engaged in various types of sheet metal fabrication, has acquired a site in that city for the erection of a factory building. J. A. Richardi is president.

How High Is Up?

Secrecy regulations prohibit revelation of operating altitude of this Air Force jet bomber—the eight-jet Boeing YB-52 Stratofortress—but it is 'way up there, just sitting on the ground. The tail is 48 feet high

West Coast Electrical Moves

West Coast Electrical Mfg. Corp., Los Angeles, moved to 233 W. 116th Place, that city.

Hobart Opens Tulsa Branch

Hobart Bros. Co., Troy, O., opened a branch office and warehouse at 1535 S. Yale St., Tulsa, Okla. Hobart manufactures arc welders, electrodes and accessories.

Instrument Firm Expanding

Friez Instrument Division, Bendix Aviation Corp., Baltimore, maker of meteorological instruments, is expanding its machine shop and also installing equipment for the production of a new item.

Canadian Firm Gets Contract

Canadian Locomotive Co., Kingston, Ont., will begin production later this year on a new order for torpedo tubes from the Royal Canadian Navy. The $1,750,000 contract, using aluminum from the Kingston plant of the Aluminum

OF THREADS
NATIONAL FORGE & ORDNANCE COMPANY
Irvine, Warren Co., Penna.
STEEL MAKERS • FORGESMITHS • HEAT TREATERS • MACHINISTS • MACHINERY AND TESTING EQUIPMENT MFRS.

Where Quality Production is a "Must"...

ALAN WOOD'S

30" STRIP MILL

The Alan Wood 30" continuous strip mill continues to produce plates, sheets, and strip at a high speed consistent with top quality.

To serve you better, we are continuously working to expedite production and shorten delivery cycles.

Strip, sheets and plates are only a few of the many products of Alan Wood Steel Company. In *all* of them, our mine-to-mill-to-market program helps to maintain highest standards despite accelerated production.

Over a Century and a Quarter of Iron and Steel Making Experience

ALAN WOOD STEEL COMPANY

Conshohocken, Pennsylvania

Ivy Rock, Pa. • Swedeland, Pa. • Dover, N.J. • Oxford, N.J.

Co. of Canada, will require about 18 months to complete.

Volkman Heads Steel Bar Group

Carl L. Volkman, manager of construction materials and director of Pollak Steel Co., Cincinnati, was elected chairman of the board of directors of Rail Steel Bar Association, Chicago.

Honeywell Opens Illinois Plant

A factory is being opened at Warren, Ill., to expand production of the Micro Division, Minneapolis-Honeywell Regulator Co., Minneapolis. The leased plant will produce the division's one product—a precision, snap-acting switch, having more than 5000 variations.

Piqua Firm Acquires New Line

Wood Shovel & Tool Co., Piqua, O., manufacturer of shovels, spades, scoops, pot hole diggers, augers, barn scrapers, hay knives and rakes, purchased the physical assets and wheelbarrow production facilities of Kilbourne & Jacobs Mfg. Co., Columbus, O. Machinery and dies of the K. & J. Division will be moved to the new owner's Piqua plant.

Air Products Inc. Expanding

A $200,000 expansion and shop rearrangement program for increased production efficiency is nearing completion in the Emmaus and Allentown, Pa., plants of Air Products Inc. of the latter city. The company manufactures oxygen-nitrogen generators and equipment employing extremely low temperatures used in the steel, glass, chemical and petroleum industries. Construction is also under way on the first unit of six in an Air Products laboratory in Allentown.

DMPA Negotiates Contracts

Defense Materials Procurement Agency, Washington, negotiated seven more purchase contracts to assist in development of deposits of manganese in Mexico. The contracts call for delivery of 136,000 tons of manganese ore to the United States; five contracts covering the sale of 280,500 tons were announced previously. Contracts for an additional 133,500 tons are under negotiation. The latest contracts are with: Minas Consolidadas, S.A., El Paso, Tex.; Fierro y Manganese, Torreon, Coahuila, Mexico; Ore & Ferro Corp. and Continental Ore Corp., both of New York; Minero Fernandez and Yacomo Inc., both of Chihuahua, Mexico; and Explotadora de Minerales, Mexico City, Mexico.

Hoover Renames Motor Division

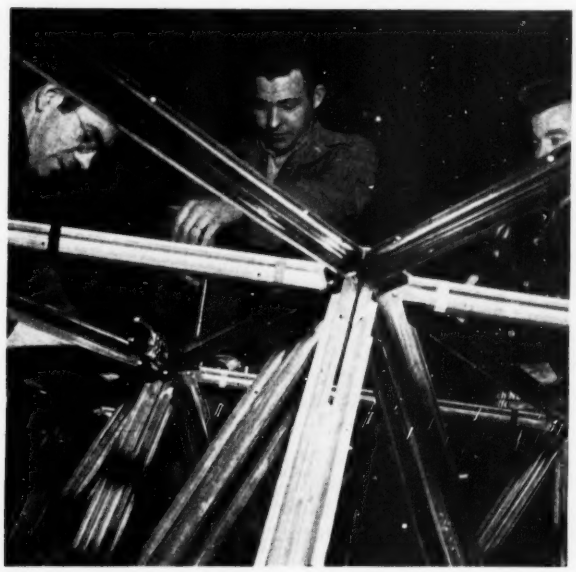
Hoover Co., North Canton, O., changed the name of its Kingston-Conley Division to Electric Motor Division, located in North Plainfield, N. J. The division manufactures all types of electric motors ranging from 1/6 through 7½ hp.

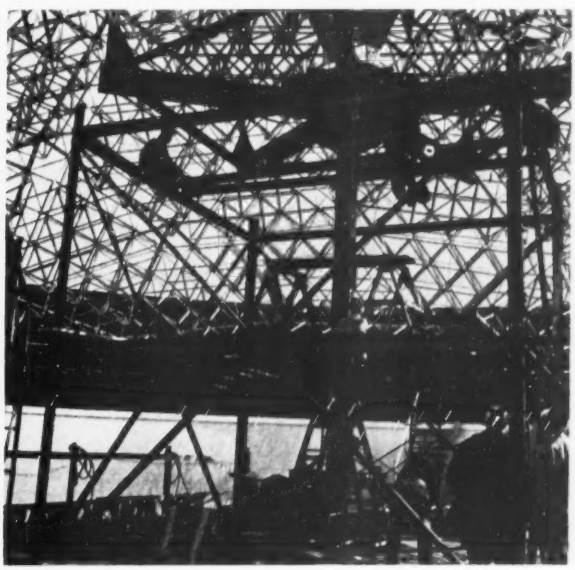
Doepke Mfg. Names Agents

Charles William Doepke Mfg. Co., Rossmoyne, O., appointed as distributors of its materials handling system: E. D. Flournoy Co., El Paso, Tex.; Harold G. Taylor Co., Toledo, O.; Peter G. Ward Co., Jacksonville, Fla.; and Grady W. Jones Co., Memphis, Tenn.

Fluid Power Firms Organize

National Fluid Power Association was organized by a group of 45 companies in the fluid power industry. These companies manufacture such products as hydraulic and pneumatic valves, cylinders and pumps. John C. Hanna, vice pres-





Web of Aluminum Spars Forms Geodesic Dome

A geodesic dome, first commercial application of a new structural principle, covers the inner court of the Ford Rotunda, Dearborn, Mich. It is 60 ft high at the rim; 106 ft at its zenith. The dome has a base of 93 ft in diameter and a circumference of 292 ft. It is made of 19,680 aluminum spars and weighs only 17,000 lb. First phase of erection was assembly of simple triangles using aluminum spars. Workers built these triangles into an octahedral frame. Then 10 octahedra were combined into a triangular truss. The trusses were erected to form the dome grid. The components are held together by 160,000 aluminum rivets and 7000 stainless steel bolts. Joining the 160-lb trusses are 91 six-pound hubs. Radiating from the hubs and connecting them are 250 aluminum spines

ident, Hanna Engineering Works, Chicago, was elected chairman. Other officers include: B. N. Ashton, president of Electrol Inc., Kingston, N. Y., first vice chairman of the association; John E. Erskine, vice president of Racine Hydraulic & Machinery Inc., Racine, Wis., second vice chairman; E. G. Peterson, president of Hannifin Corp., Chicago, treasurer. Col. Barrett Rogers, industrial management consultant, is executive secretary. Headquarters of the association are at 1618 Orrington Ave., Evanston, Ill.

DuBrucq Heads Association

Ray C. DuBrucq, special Washington representative of Rockwell Mfg. Co., Pittsburgh, was re-elected president of Association of Manufactures of Woodworking Machinery for the fourth consecutive year.

Pittsburgh Branch Office Moved

Great Lakes Carbon Corp., New York, moved its Pittsburgh office to 425 Sixth Ave.

Anodizing Firm To Build

American Mollerizing Corp., Beverly Hills, Calif., licensed Light Metal Processors Inc., Redwood City, Calif., formerly of Chicago, to use its process for the coating of steel with aluminum to prevent rust or corrosion. Light Metal Processors, a large anodizing corporation, will construct a $250,000 plant to begin operations immediately. The firm is headed by Harold G. Erstrom.

Ipsen Opens West Coast Branch

Ipsen Industries Inc., Rockford, Ill., manufacturer of automatic heat treating equipment, opened a sales branch in Burbank, Calif.

Parker Acquires Valve Business

Parker Aircraft Co., Los Angeles, subsidiary of Parker Appliance Co., Cleveland, acquired Proof Industries Corp.'s complete line of aircraft hydraulic directional control valves along with Proof's order backlog of these products amounting to about $1 million. The transaction includes leasing of Proof's plant and facilities at 10000 Exposition Blvd., Los Angeles, which is operating as Proof Division of Parker Aircraft Co. Proof Industries Corp., Cleveland, will continue the manufacture of other products at its plant at 3190 W. 32nd St., that city.

Kawecki Opens New York Office

Kawecki Chemical Co. Inc., Boyertown, Pa., opened offices at 220 E. 42nd St., New York, under the direction of Joseph C. Abeles, vice president and sales manager. The firm manufactures high-purity selenium, ferroselenium, and a number of double fluoride compounds.

Electrofilm Licenses Firm

Keystone Chromium Corp., Buffalo, was licensed as a custom processing plant by Electrofilm Corp., North Hollywood, Calif. Some equipment has been installed in the plant for the process, says Harold M. Karet, president of Keystone.

Alloy Rods Names Agents

Alloy Rods Co., York, Pa., manufacturer of alloy arc welding electrodes, appointed as distributors: Massey Auto Parts, Brownwood, Tex.; Heidt Equipment Co., Oakland, Calif.; Rene Neveu & Son, Plattsburg, N. Y.; Welders Supply Co., Portland, Oreg.; Lone Star Welding Supply, San Antonio, Tex.; General Engineering & Machine Co., Tampa, Fla.; Dunlap Welding & Supply Co., Zanesville, O.

Wide World

Looking Back 70 Years

F. H. Zurmuhlen, public works commissioner, checks north roadway of Brooklyn bridge, following extensive revamping. Roebling family was honored by a plaque, unveiled during a ceremony marking the bridge's 70th birthday this month. Bridge work was started by John A. Roebling in 1867

IBM Plans Expansion

International Business Machines Corp., New York, is completing plans for construction of a manufacturing building in Endicott, N. Y., which will add about 139,200 sq ft to the company's facilities in that city. The structure will house complete heat treating, plating and plastics molding facilities. Actual construction will start in September.

GE Plans Plant Addition

General Electric Co., Schenectady, N. Y., obtained a city building permit in Scranton, Pa. for a $1,620,000 addition and alterations to its tube plant in that city. The estimate does not include plumbing work.

Newport Honors 461 Workers

Newport Steel Corp. honored 461 men and women who have spent 25 years or more of continuous service in steel operations at Newport and Wilder, Ky. The combined service of the entire group is 13,292 years.

Acting as toastmaster at a dinner honoring the veterans was Carl W. Riefkin, a Newport Steel Corp. vice president. Speakers were Frank S. Gibson Jr., chairman and president; and A. P. Miller, vice president.

Offers Mathematical Service

Due to the increasing importance of mathematical methods in the field of metallurgy, Mathematical Computing Service, 105 Court St., Brooklyn, N. Y., was organized to treat problems in applied mathematics related to the physical sciences. The organization specializes in performing services for industries and universities desiring engineering calculations of a high degree of complexity, charts and nomographs and the treatment of related mathematical problems in the field of metallurgy. An important function of the group is the mathematical formulation and complete solution of a problem from given physical data.

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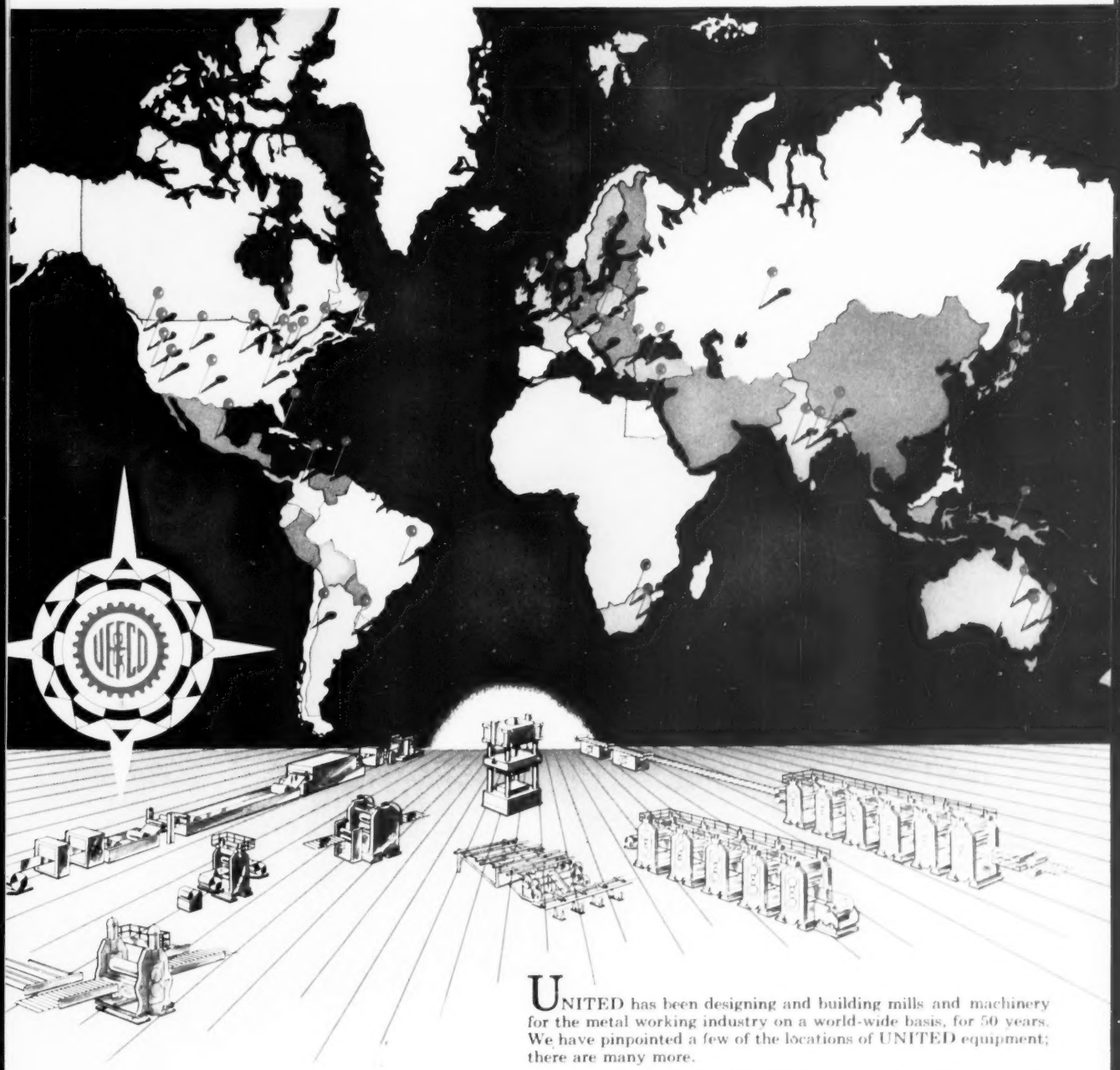

UNITED has been designing and building mills and machinery for the metal working industry on a world-wide basis, for 50 years. We have pinpointed a few of the locations of UNITED equipment; there are many more.

Inquiries concerning modern rolling mills and metal processing equipment are solicited from mill operators everywhere; for no matter where in the world you are—at home or abroad—UNITED can serve you.

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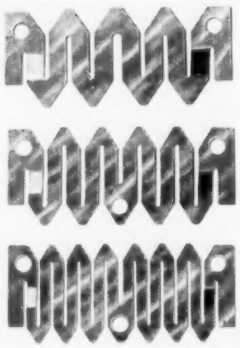
designed for efficiency

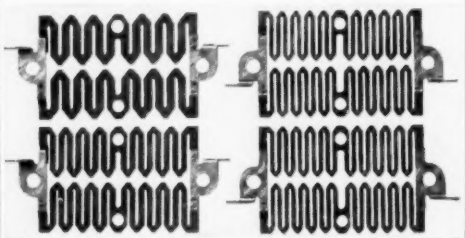
WIDTHS AND OPENINGS MATCHED TO AMPERE AND RADIATION NEEDS

EC&M *Welded Plate* Resistors, available in continuous capacities from 13 to 150 amperes, meet resistor requirements with a minimum number of sizes, and with each size efficiently proportioned to give topmost performance.

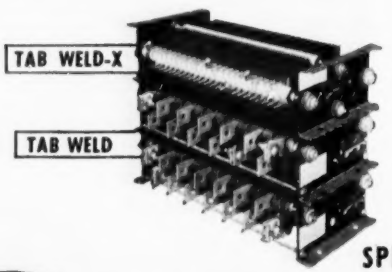
Spacing between individual grids is liberal—from $\frac{3}{8}$" to $\frac{3}{4}$"—eliminates crowding and permits good radiation. Only insulating spacers are required between grids, because grid-ends mate with adjacent grids, and are welded to provide continuous current-path, independent of end clamping-nut pressure. This construction *stabilizes* the OHMIC value, *stops burning* at grid-eyes and at tap-plates.



Nos. 1, 2 & 3 TAB-WELD Grids
3 thicknesses per design gives 9 sizes



Nos. 4, 5 & 6 TAB-WELD-X Grids
with No. 6 furnished in 2 thicknesses



SPECIFY EC&M BULLETIN 942 WELDED PLATE RESISTORS

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

PROCESS WITH PROMISE—Use of diamond-wheel grinding assisted by electrolysis shows promise as a commercial method for sharpening single-point carbide tools. In a recent progress report on their studies of the method, Norton Co., Worcester, Mass., says commercially acceptable rates of cut in conventional grinding can be maintained with their metal-bonded wheels operated with electrolytic assistance on the order of 250 amps per square inch and with a diamond consumption which is only a fraction of that required for the same operation using conventional methods. Thus, electrolytically assisted diamond wheel grinding offers a means for conserving diamond bort. However, Norton points out, there is some evidence of attack on adjacent edges by electrochemical erosion. In spite of this shortcoming tools have a life comparable to similar tools ground conventionally.

CORROSION STOPPED—Two types of cathodic protection of ships in the reserve fleet anchorages are to be used by the Maritime Administration. At the Wilmington, N. C., and Hudson river anchorages carbon anodes are buried along the shore line and current is impressed to set up the circuit between the anodes and the ships at anchor. In the case of the James river fleet, sacrificial anodes of magnesium are suspended over the ships' sides to provide the necessary current.

TIN PLATE—Worries about tin for tin plate may be a thing of the past if research scientists of the Mellon Institute, Pittsburgh are successful. In the 40th annual report of the Institute, Dr. Edwin R. Weidlein, president, revealed that extensive research is now being conducted to develop a new organic coating for sheet steel. Said Dr. Weidlein, "this may be a satisfactory substitute for tinplate in the manufacture of containers and closures for food and other products."

FOUNDRIES GAIN—80 Per cent of all foundries will eventually use industrial resins for fabricating cores according to an estimate by Libbey-Owens-Ford Glass Co. Field use of urea core binder resins has demonstrated that smoother, harder-surfaced castings with closer tolerances can be produced with a savings in time and money. Royalty-free licenses covering the use of urea resins in casting light metals have been made available to the foundry industry by LOF.

HELP FOR SMELTERS—Substitution of wood waste for a good part of the coal or coke normally used in the furnace charge for ferroalloy production may markedly improve operations based on tests recently made by the U.S. Bureau of Mines. Advantage: It is possible to control smelting temperatures by regulating the charge density. Ferrosilicon producers have long added small amounts of wood wastes in electric smelting to give porosity to the charge so that gases can escape. Bureau of Mines work shows that the use of larger proportions of wood wastes not only gives a more porous charge but also helps regulate the feed rate to the smelting zone and the smelting temperature. The process is applicable to both slag forming and non-slag forming operations. Some uses that the Bureau foresees: Smelting operations with silicon alloys, ferronickel, silicomanganese and chromite, among others.

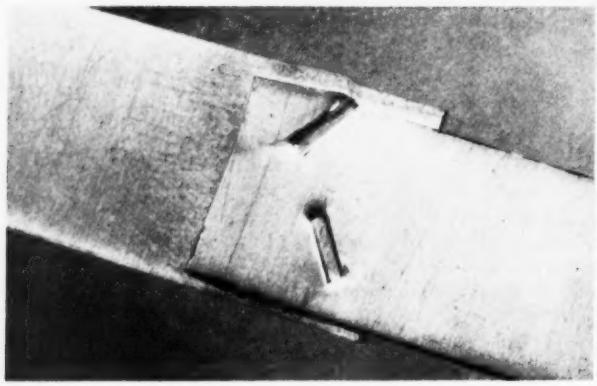
PROTECTS SHEET—In shaping or stamping sheet metal for vehicle body panels there is a risk of surface defects such as Luders lines and stretcher chains. According to a recent British patent this may be prevented by cold rolling between a pair of rolls, of which one rotates independently of the metal, and the other has an adjustable braking torque applied to reduce its surface speed.

NEW APPROACH—Improperly attended sodium chloride-potassium chloride salt baths used for heat treatment of steel may cause harmful decarburization. Buildup of alkaline compounds, particularly carbonates in the salt bath has been claimed by many experimenters to be the main cause of trouble. However, recent tests indicate that it is not the carbonate per se which is responsible for decarburization but rather moisture associated with the molten salts.

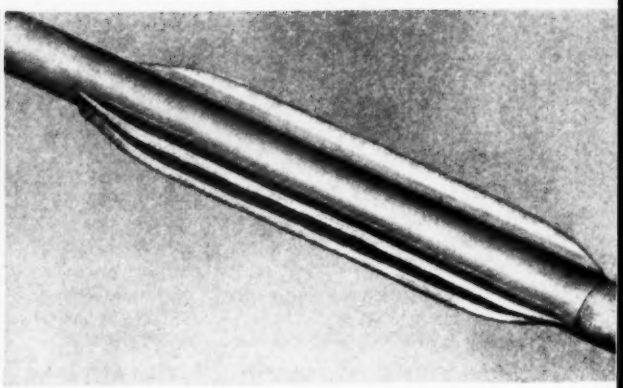
COLLAPSIBLE CARRIERS—Steel shipping containers have a promising new competitor—drums made of synthetic rubber in 55, 600 and 3000-gallon sizes. Tests at the Naval Engineering Experiment Station, Annapolis, Md., show the rubber drums are useful in shipping wheat flour from mill to baker, parachuting water for fighting forest fires, and transporting petroleum products, antifreeze solutions, cleaning solutions, paints and liquid food products. Advantages are listed as absence of rust and corrosion, resilience, light weight, collapsibility when empty, substitution for strategic metal. Disadvantages: High initial cost, temporarily poor procurement potential and non-adaptability to existing cleaning and loading machines.

METALWORKINGS—Week of June 15 shapes up as a busy one for metalworking executives. New York, Philadelphia and Houston are the cities to watch. American Electroplaters Society gathers at the Benjamin Franklin in Philadelphia for a four-day annual meeting beginning the 15th and through the 18th (p. 114) . . . The same day marks the beginning of the week-long Basic Materials Conference & Exposition in New York (p. 122) . . . Furthest from the beaten path is the combination spring meeting and Welding and Allied Industry Expo sponsored by the AWS (pp. 98, 100). For its first exhibition away from the fall Metal Shows, site chosen by the welders is the famed Shamrock hotel in Houston.

Metalworking Outlook—p. 39 *Market Outlook—p. 125*



Depressions indicate two cold process pressure welds made in aluminum sheet with simple hand tools. A line of tools is being developed especially for this work



Two No. 12 B & S aluminum wires joined by cold welding. The fins represent metal squeezed out of the overlapping joint when making the cold weld with a hand tool

Pressure Welding Attracts Interest

Work can be done cold or at elevated temperatures. Both techniques are still in the development stage but appear promising, particularly for aluminum and its alloys

NEWEST joining techniques for nonferrous metals and still undergoing development work are low and elevated temperature pressure welding. Both involve mechanically working the metal at the weld interface. In the first method, work is done at normal room temperatures and in the second, temperatures range around 800 to 1000° F.

Cold welding has created considerable interest although few applications have been made to date. Successful uses in England are reported including the seam welding of boxes, sealing of tube ends and other forms of capped joints and the joining of flanged tubes to plates for hose connections. An important application appears to be for tube making.

Work Range — Process is most suitable for aluminum and the aluminum alloys, although it has been used successfully on cadmium, lead, copper, nickel, zinc and silver as shown in the accompanying table. No heat is used from any source. By proper arrangement of workpiece and dies, sufficient pressure is applied to cause ductile metals to flow at room temperature, bringing the work surfaces into intimate contact so that a genuine weld is made.

As the two work surfaces to be joined are brought together and pressure is applied, these surfaces are sealed off from the atmosphere. Then as further pressure is applied, the dies are so shaped as to cause the metal at the contact surfaces to move sidewise or grow sidewise. This action in turn exposes clean fresh metal from below the contact surface of each part. Since this metal is not exposed to air, continued application of force causes these new metal surfaces to join each other, producing a true weld with a continuous grain structure.

Ductility Required—It can be applied only to metals sufficiently ductile to flow readily. Not more than 3 per cent manganese or silicon can be tolerated in aluminum alloys to be cold welded. Heat-treatable alloys such as 17S and 24S can be joined in the soft condition and then allowed to harden (age at room temperature) in the usual way.

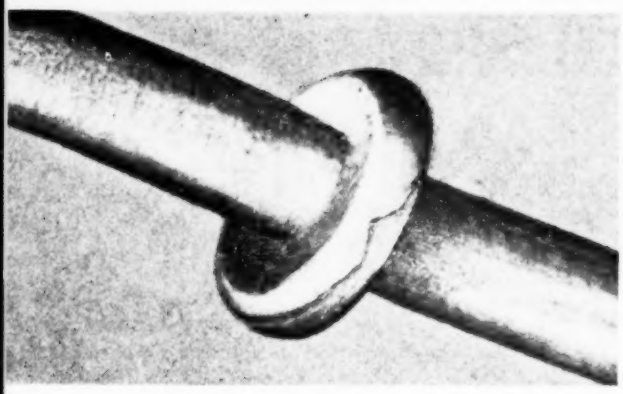
For successful cold welding, the shape of the dies is of utmost importance. They must apply pressure over a comparatively narrow strip and in such manner as to make the metal flow sidewise at the weld interface. Proper control of metal flow is the critical factor. The pressure required is only slightly above the flow point for aluminum—around 24,000 to 36,000 psi.

Cleaning is also important. Use of a power-driven rotary wire brush running at a surface speed of 3000 feet per minute is recommended.

Accompanying three illustrations show typical cold welds made in aluminum with simple hand tools. A complete line of hand tools for joining aluminum items by cold welding is now being developed and will soon be made available for large-scale use.

Figure It Out—Minimum reduction in thickness required to insure a satisfactory weld varies with the metals and in fact determines the "Figure of Merit," used to classify the various metals as regards their suitability for the process, according to the following formula:

$$\text{Figure of Merit} = 100t/T$$



End-to-end joining of two No. 16 B & S aluminum wires to produce a butt weld. Considerable metal is forced out of the weld but it can be trimmed when necessary

By CHARLES BRUNO and GEORGE W. BIRDSALL
Reynolds Metals Co.
Louisville

COLD WELDABLE MATERIALS

Material	Figure of Merit
Super-Pure Aluminum	40
Commercially Pure Aluminum	about 30
51S Alloy	29
3S (1.25% Manganese)	20
Duraluminum (24S, 17S)	20
Cadmium	16
Lead	16
Copper	14
Nickel	11
Zinc	8
Silver	6

Where:

t = thickness of completed weld
T = double the thickness of the original material

This formula can be transposed so that when the Figure of Merit is known, it will give "t" which can be used to determine the final gap that the die set should produce upon completion of the weld, as follows

t = T x Figure of Merit/100

Thus for commercially pure aluminum with a Figure of Merit of 30, the gap should be set at 0.3 T, where "T" is the double thickness.

Heated Up—A second process for pressure welding requires elevated temperatures in the neighborhood of 800-1000° F, depending upon the alloy being joined. In this method, the aluminum parts (usually made from sheet) are placed in a press between heated dies. Here the work is held under pressures approximating 6000 psi at points where welds will have to be made.

Work is held in the dies about 30 seconds to permit the required transfer of heat to the work. The resulting combination of heat and pressure is sufficient to produce welded joints at the surfaces desired.

Success of such a weld depends largely upon the condition of the surfaces at the weld interface. Absolute cleanliness and minimum oxide layer are of utmost importance. A combination of degreasing, caustic etch, and power wire brushing is recommended.

One sequence found suitable is a ½-minute dip in 15-20 per cent caustic soda solution at temperature of 120-140° F; followed by water rinse; and finally dipping in a 15-20 per cent nitric acid solution, rinsing, and drying in an electric furnace. Gas fired driers are unsuitable as the furnace atmosphere attacks the aluminum. After drying, the surfaces to be joined by welding are power wire brushed and immediately welded.

Keep It Clean—Protection of the prepared surfaces is vital. Even a fingerprint will cause a faulty weld. Dust, dirt, and talc must be carefully prevented from contaminating the surfaces. Cheapest method of surface preparation on a large scale is to etch the sheet before the last pass in the rolling mill, finish with polished rolls, and then wire brush the sheet just before pressure welding.

Discovered in Europe, it is used by two concerns for fabricating aircraft radiator fins and similar hollow components, using the following setup: Two thin sheets of aluminum are placed cold, one on the other, between forming dies in a quick acting hydraulic press. Projections on the dies are heated by means of gas burners so that die temperature is between 788 and 987° F, depending upon the alloy being handled. Clamped between the dies for about 30 seconds, sufficient heat is conducted to the aluminum surfaces to cause them to weld together.

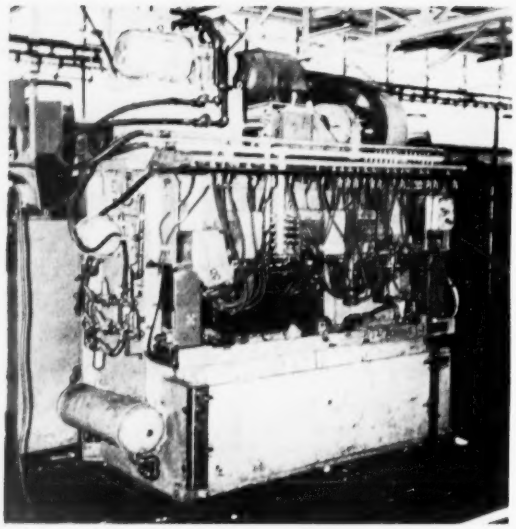
At the same time, compressed air at 200 psi is admitted between the two flat sheets, causing them to expand to fill the die contour to give the hollow component desired. This also prevents subsequent warping or buckling of the part.

Lasting Qualities—A die life of 750,000 welding operations is reported when welding annealed aluminum sheets in this setup. A million is anticipated, after which light machining of the die might be required.

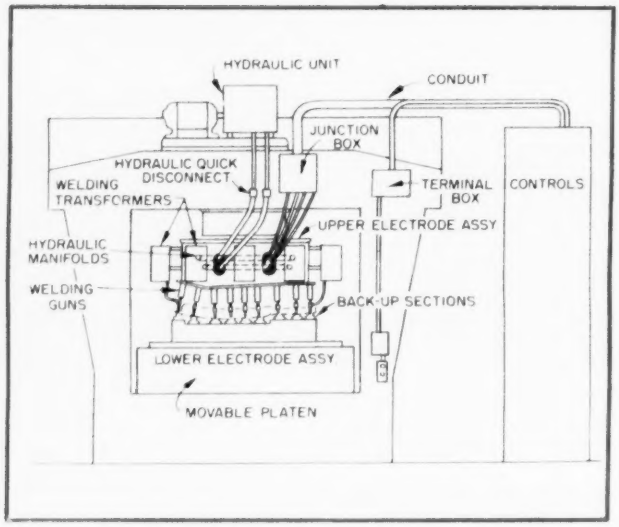
To prevent the work from sticking to the dies, die contact points should have quite a definite roughness, not obtained with machine tools. The higher the finish, the greater the tendency for the part to stick.

Before initial heating, thoroughly coat contact points with a talc-saltpeter (2:1) mixture. First few parts will stick fast and must be torn off. As the tooth becomes rough with use, sticking becomes less frequent and eventually ceases altogether.

In production, every second sheet should be thinly smeared with the mixture of talc and saltpeter diluted with water. Wash the sheet immediately after welding to avoid corrosion.



This typical two-post or open multi-transformer welding press is used for most small assemblies



Similarity of electrode assemblies to dies on a stamping press is marked, except that lower electrode is the movable platen

Resistance Welding Shines

AS VOLUME PRODUCER

Big plus is versatility and the ability to tie in with automatic parts handling equipment. Spot welds are laid down quickly and accurately spaced every time

By JACK OGDEN
Fisher Body Division
General Motors Corp.
Detroit

USERS of resistance welding equipment are finding pressweld-ing ideally suited to many of their high-production applications. But lack of disseminated information on the art appears to be holding up a much broader usage of this versatile technique.

In its general concept, press-welding may be likened to present day stamping press practice, but instead of forming or trimming metal, the weld-press produces from 16 to 160 spot welds practically simultaneously on a given assembly. Beauty of the system is that several presses can be tied together into a continuous flow line, with mechanical handling equipment and automatic and semi-automatic transfer loading and unloading of the assemblies.

Big Difference — Welding press differs from the usual stamping press in that the ram or movable platen is generally located in the lower part of the machine. This arrangement facilitates the location of the welding units and usually favors loading of the parts to be welded. A four-post machine is used for large assemblies while the two-post or open press is used for smaller operations.

The press platens are operated by motor-driven linkage systems or fluid pressure cylinders. On large presses, the platen weight is usually counterbalanced with an air cylinder system. The welding electrode units correspond to the dies of the press; the upper or stationary electrode usually consists of a frame work supporting the electrode pressure units, the welding transformers, the cooling and pressure medium manifolds. Lower electrode assembly supports the back-up electrodes and part locators.

Easy Replacement—In the more complicated units, electrode pressure cylinders and welding transformers may be located both in the upper and lower electrode assemblies. To fully utilize the advantages of the press system, the electrode assemblies should be designed to permit easy removal and replacement of the entire electrode unit. Thus a given press line can be used for several different operations.

In early forms of the press-welder, comparatively large transformers were attached to the crown or base of the press and connected to the electrodes by long secondary cables. Advent of the small package transformer permitted locating the transformers on the electrode assembly, thus greatly facilitating electrode changes and reducing primary current demands.

Real Advantages — Presswelding has several distinct advantages in high-production applications. Some of the major ones are:

1. Permits accurate and uniform location of spot welds.

2. Welding of large numbers of assemblies on one high-production fixture rather than on a number of like lower-production fixtures eliminates a particularly vexing problem of fixture coordination.

3. Permits the use of one or a group of presses for a number of different welding operations in the same manner that a stamping press can be used for producing different parts by changing dies.

4. As individual electrodes produce only one or two welds per assembly, their life is increased and production shut downs for electrode dressing can be virtually eliminated.

5. Lends itself exceedingly well to automatic part handling equipment, particularly in progressive operation setups.

Successful employment of presswelding to improve quality and reduce production cost requires particular emphasis on the following items:

1. Loading and unloading of parts and assemblies.

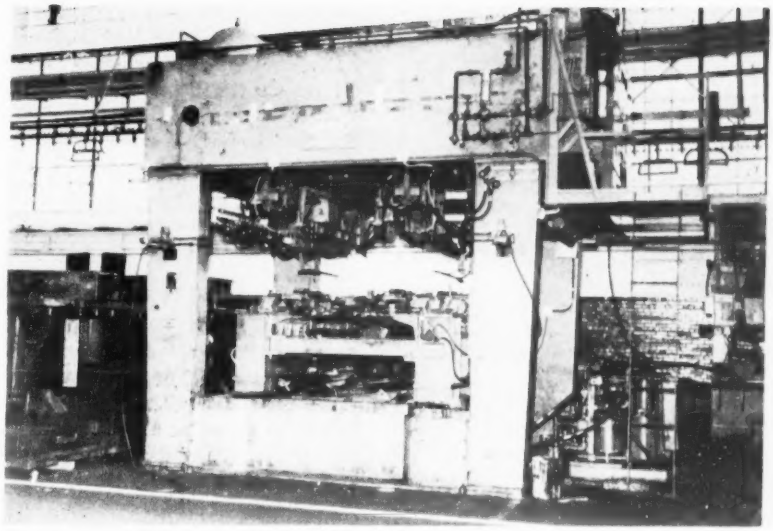
2. Development of simple, accurate part locators.

3. Design and maintenance of equipment to reduce production down time. This becomes extremely important on progressive operation installations, where four or more presses may be synchronized in line.

4. Proper maintenance of electrode tips and backups.

Secondary Voltage Control—Three systems are most generally used. Use of tap changing welding transformers permits the maximum voltage flexibility where accessibility and space considerations permit their installation. Another system employs one large auto transformer per phase with multiple switching devices feeding groups of two or more welding transformers. Individual adjustment of welding transformer voltages is impractical with this system. However, fixed ratio welding transformers may be more compact in design for the same outputs.

Not as widely used as the other two, variation of secondary output by means of phase shift heat control has many interesting possibilities. It provides stepless control with minimum space requirements and compares costwise with other methods if transformers are grouped as in the auto transformer system.

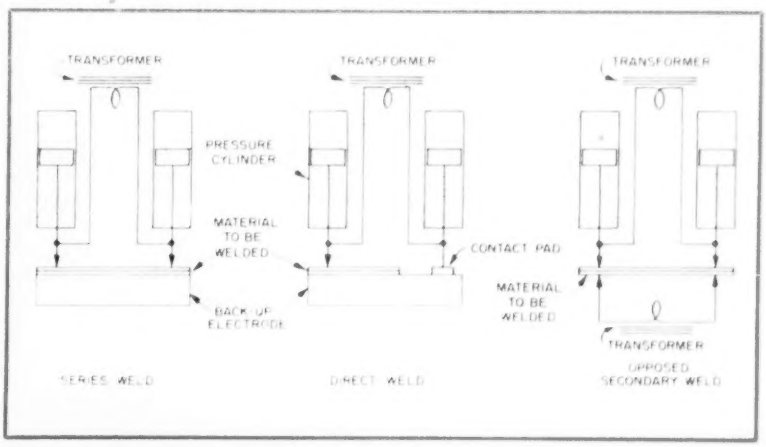


Large assemblies are presswelded on this four-post crank operated multi-transformer unit. Note how handling equipment moves parts at bed height

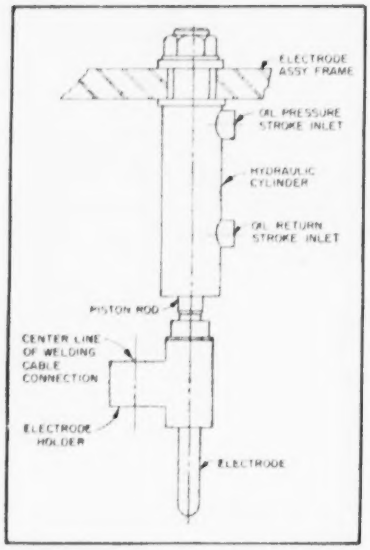
Secondary Circuits—From a machine design standpoint, series welding is the ideal arrangement and has been a big factor in the adoption of presswelding. Number of secondary circuits required for direct welding are cut in half because feed and return path are both on the same side of the part. Inherently this circuit produces very little indentation on the backup side of the part and a deep indentation on the "hot" side. Metal on this side is usually less than 0.050-inch thick.

Direct welding circuit is frequently used for stock thicknesses of over 0.050-inch where the welds are close to the edge of the assembly. It differs from spot welding secondary circuit in that there is no permanent connection between transformer and backup electrode. A contact pad or wiping contact simplifies the mechanical machine design and improves the loading conditions.

Opposed secondary method combines the series and direct welding principles. Requiring the same number of secondary circuits as the direct method, it greatly reduces the impedance when producing welds near the center of a large assembly. It does not have the



Stylized diagrams of the three typical secondary circuit arrangements



Each welding gun has its own hydraulic pressure stroke cylinder which forces electrode against its backup

stock thickness limitations of the series method, and when same contour electrodes are used on both sides of the assembly, current leakage during welding is negligible for practical spot spacings.

Heads and Electrodes—Although spring or air cylinder loaded devices are sometimes used, oil actuated cylinders are generally preferred as they are compact, independent of electrode wear, may be retracted easily for part clearance and do not load the platen while in motion. The hydraulic power system for cylinder operation should have rapid followup characteristics to prevent loss of pressure during the weld.

Conventional Class No. 2 alloy water cooled tips are generally used in either ½ or ⅝-inch diameters. Our experience shows that a 1½-inch radius produces the best welding results on mild steel in the 0.030 to 0.090-inch thickness range. In the design of backup electrodes, either inserts or lands are used at the weld location. Solid backups following the contours of the panel are very satisfactory when new, but present an excessive "tuning" problem when localized wear occurs.

Weld Spacing—When using direct or opposed secondary welding methods, the spacing in a series of welds is usually determined by the electrode holder and pressure cylinder construction. One and one-half inch centers are common practice minimum. In series welding, the shunt current effect determines the practical minimum spacing, but a spacing of 1½ to 2 inches is a good practical minimum.

Electrode force is an important consideration. To avoid excessive current requirements and excessive indentations, series presswelds are usually made with approximately one-half the electrode force recommended by AWS for direct welding. AWS recommendations are well suited to direct or opposed secondary welds. When conditions permit increasing weld time, somewhat lower forces may be used with lower currents.

Current Recommendations — Series welds require approximately 110 per cent of AWS recommended values (for direct welding) when using 50 per cent of force and 100 to 125 per cent of weld time recommendations. Although series weld currents may exceed direct weld current values by 10 or 15 per cent, each circuit produces two welds; thus actual primary current may be only 55 or 60 per cent of the direct weld requirements.

Weld Time — Using electrode force and weld currents described above, the most consistent series welds are produced when relatively long weld times are used. From 100 to 125 per cent, AWS direct weld standards appear quite satisfactory.

From a paper delivered at the Annual Symposium, Cleveland Section, AWS.

AIEE Talks Resistance Welding

Some of the questions raised in the welding industry concerning the use of electric power, will be answered June 16, in Atlantic City, when a session of the summer general meeting of the American Institute of Electrical Engineers will be devoted to "Utility Charges for Service to Resistance Welders."

This particular technical session is one of 54 on electrical engineering with its many ramifications in industry and science. The sessions will be held during the five-day meeting, June 15-19 inclusive, under the sponsorship of the Philadelphia section of the Institute.

18-8 Alternate Looks Good

AUSTENITIC alternate for 18-8 stainless, developed by Allegheny Ludlum Steel Corp., offers good cold working properties, good weldability, and good ductility. Produced with manganese, chromium and less than one per cent nickel as principal alloying elements, this steel offers promise of widespread usefulness.

Under development for many months chromium-manganese stainless strip is now produced in substantial quantities, and is available in most other forms. It is believed by the company to be the vanguard of a new family of stainless steels that will be a permanent addition to the stainless market.

Answer to Shortage—Development work was undertaken because of the restricted usage of nickel, in an effort to obtain an austenitic stainless steel with less than one per cent nickel. This steel is needed where straight chromium steels are unsatisfactory as substitutes for 18-8.

In applications where critical requirements include the mechanical properties of welds, ductility, nonmagnetic qualities, and cold working to high strength, the chromium manganese steels should be considered. However, present types of manganese austenitic stainless steels are not cure-alls for every application, particularly where extreme corrosion resistance is required. It is expected that where straight chromium steels are serving satisfactorily as an alternate for the 18 per cent chromium—8 per cent nickel steels, consumers will continue their use.

Advanced Course in Materials

A special summer program in advanced strength of materials, designed to provide a broad survey of the present state of the art and its applications in the fields of aeronautical, civil, and mechanical engineering, will be given from July 6 to 17 during the 1953 summer session at the Massachusetts Institute of Technology.

The course will consist primarily of a co-ordinated sequence of thirty lectures, with supplementary round-table discussions and visits to M. I. T. laboratories.

Special

REVERE MILL TECHNIQUES

serve American Sanitary

Shown here are a few of the more than a thousand of American Sanitary plumbing goods made largely of Revere brass plumbers' tube. This tube is made by special techniques developed by the Revere Mills to assure easy fabrication into plumbers' items.

Almost every home in this great country of ours has plumbing. Most people never give a second thought to traps and bends and elbows, sink strainers, flanges and so on. But both Revere and American Sanitary Manufacturing Co., Abingdon, Illinois, think a lot about them. American Sanitary makes over a thousand such items for plumbing, and buys a great deal of Revere brass plumbers' tube, also hexagonal O.D., round I.D. heavy wall leaded brass tube for easy machining into fittings. The point about this long association between Revere and American Sanitary is that Revere uses special mill techniques to produce brass plumbers' tube. These techniques make it possible for American Sanitary to produce the bends, often at 180°, without cracking, without marring the finish. Thus nickel or chromium plating can be carried out successfully, and beautiful parts produced, the parts that householders admire, and which add to the value of both new and older houses. Thus, behind even the most taken-for-granted articles there is usually a lot of special skill and know-how. . . . If you would like to benefit from the capabilities of the Revere Mills, and of the Revere Technical Advisory Service, get in touch with the nearest Revere Sales Office. See your telephone directory, or write direct.

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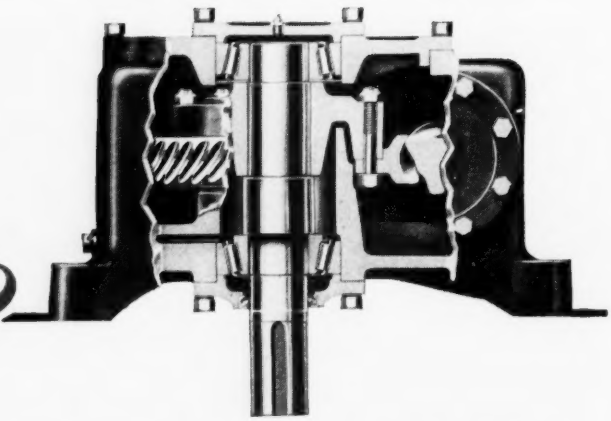


...where Dependable Performance Counts

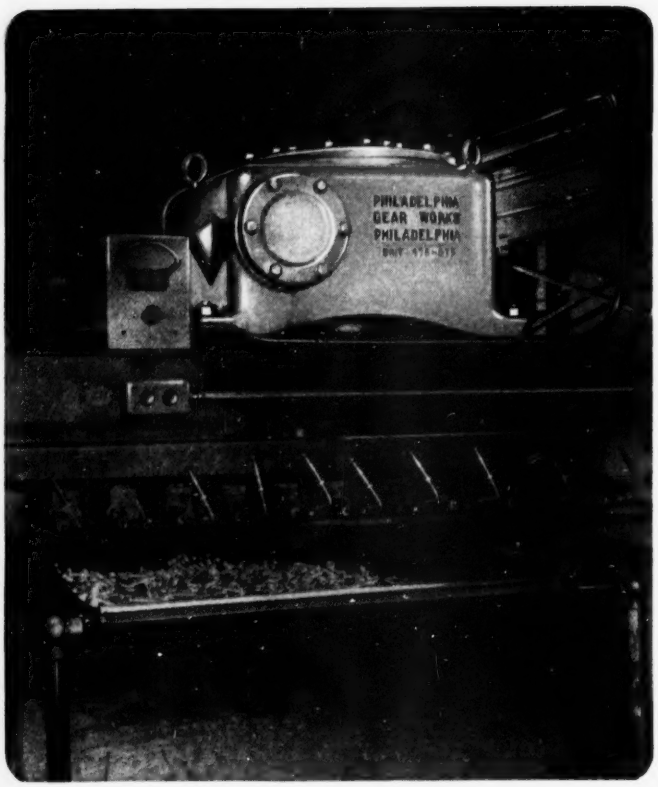
RIGHT

. . . because they are designed and built to insure efficient and reliable power transmission even under the most severe operating conditions.

Philadelphia
WORM GEAR SPEED REDUCERS

are of extremely sturdy construction throughout. Bearings have a generous spread, which in the vertical units as shown here, provide for heavy radial loads. Note, too, the famous dry-well construction which eliminates oil leaks down the vertical shaft, and these are but a few of the outstanding features found in Philadelphia units.

Vertical type reducers can be furnished with output shafts extended either up or down. Conventional horizontal types can also be supplied. A complete range of ratios from 3½:1 up to 6300:1, in units up to 250 horsepower, provide complete selectivity.



For full information on Philadelphia Worm Gear Speed Reducers, write for catalog WG-51.

Philadelphia Worm Gear Speed Reducers

Philadelphia Gear Works, INC.

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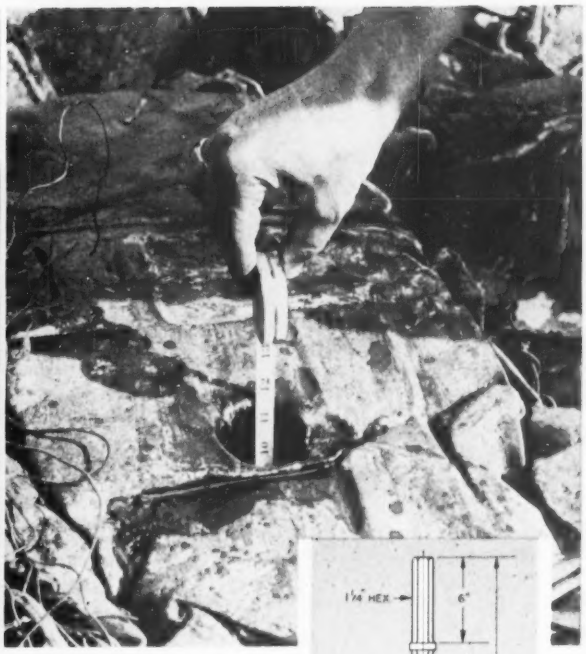
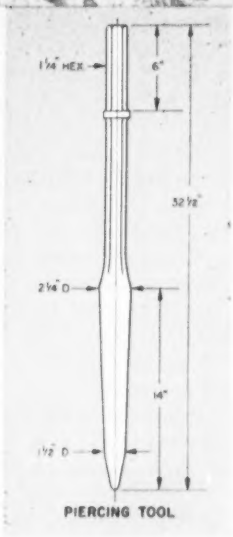
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls



Two men handle the paving breaker that pierces the bundle for the dynamite charge. A specially designed piercing tool makes the 8 to 10-inch holes



PIERCING TOOL

Blasted Bales

GIVE UP SECRETS

Checking the interior quality of purchased scrap bales is lengthy, non-productive process. Bethlehem has developed a way that lets dynamite do the work

EXPERIENCE has shown that surface inspection of hydraulically compressed purchased bundle scrap falls short of determining its quality. Opening bundles for more complete inspection has been a time-consuming and expensive proposition until an effective method of dynamite blasting was developed by the scrap inspection department at Bethlehem Steel's Bethlehem, Pa., plant.

With increasing proportions of purchased scrap received in bundle form, the older methods—drilling, friction sawing, band sawing, torch cutting, cold shearing, etc.—proved impractical.

Daylight Inspection—All incoming purchased scrap is held for inspection during daylight hours, and it is performed by two-man teams who are supplied with necessary information regarding car numbers, order numbers, type scrap, etc. Every car is given careful top-of-car inspection; and in the case of bundled scrap, a minimum of four cars from each shipper, regardless of appearance, is selected for further internal inspection. If poor quality is received from a particular shipper, every car from him is designated for inspection.

Procedure for obtaining sample bundles is as follows:

Two bundles from top of one end of the car

Two bundles from middle of the car center

Two bundles from bottom of the opposite end

Selected sample bundles are kept on the ground beside the car from which they came, and a metal sign with the car number is placed with each set of bundles for positive identification.

Opening Bundles—Bundles are prepared for blasting by first driving a 2-inch round hole approximately 8 to 10 inches into one side. An Ingersoll Rand paving breaker equipped with a special tool is used to perform this operation.

After the piercing is completed,

After piercing, one stick of dynamite is placed in each hole and capped with ordinary wet fire clay. The six bales are set for simultaneous blast

a dynamiter loads each bundle with one stick of Du Pont 30 per cent special gelatin dynamite. Ordinary wet fire clay is used as a mud-capping which completes the charging procedure. When the six bundles have been properly loaded and capped, they are exploded simultaneously.

Contaminants Check—After the bundles have been opened, the dynamiter enters the area first to examine each bundle to make sure all the dynamite has exploded. Only after this check is the scrap inspector allowed to make his inspection of the bundles to determine their quality.

Some of the contaminated bundles have contained concrete, dirt, tin cans, grease, wood, grindings, copper wire, insulating material, electric motors, and practically anything else imaginable. A simplified inspection method has become a must, not only to maintain good melts but to guard against the practices of an occasional unscrupulous scrap dealer.

Bethlehem uses a special work area about 100 feet wide and 600 feet long for blast inspection. Area is adjacent to two-track siding where 15 flatcars can be sampled at a time. Bundles are extracted by rail crane and deposited along right-of-way for blasting.

EXHIBITORS

AWS EXPOSITION

Hotel Shamrock—Hall of Exhibits

Exhibitor	Booth No.
Acetogen Gas Co., Detroit	53
Adams Alloy Co., Wakita, Okla.	7
Air Reduction Sales Co., New York	29, 108-119
Aladdin Rod & Flux Mfg. Co., Grand Rapids, Mich.	37
Allied Safety Equipment Inc., Houston	130
Alloy Rods Co., York, Pa.	120-121
All-State Welding Alloys Co. Inc., White Plains, New York	54
Aluminum Co. of America, Pittsburgh	32-34
American Manganese Steel Division, Chicago, Heights, Ill.	105-107
Ampco Metal Inc., Milwaukee	126-127
Arcair Co., Bremerton, Wash.	87-88
Arcos Corp., Philadelphia	63-64
Aronson Machine Co., Arcade, N. Y.	8
Atlas Welding Accessories Co., Ferndale, Mich.	150
Bernard Welding Equipment Co., Chicago	147
Big Three Welding Equipment Co. Inc. (Distributor for Nelson Stud Welding Division) Houston	100-101
Brush Electronics Co., Cleveland	151
Champion Rivet Co., Cleveland	51-52
Contour Marker Corp. of California, Compton, Calif.	139-140
Coyne Sales Co., San Francisco	104
Dockson Corp., Detroit	3
Eutectic Welding Alloys Corp., Flushing, N. Y.	45-49
Fansteel Metallurgical Corp., N. Chicago	102
Gamma Industries Inc., Baton Rouge, La.	95
General Electric Co., Schenectady, N. Y.	16-19
Handy & Harmon, New York	30-31
Harnischfeger Corp., Milwaukee	35-36
Heath Engineering Co., Ft. Collins, Colo.	9
Hobart Brothers Co., Troy, O.	89-91
Holger Andreasen Inc., San Francisco	144
Houston Oxygen Co. & Smithweld Co., Houston	96-97
Industry & Welding Magazine, Cleveland	Location B
Industrial X-Ray Engineers, Houston	152
International Nickel Co. Inc., New York	73-78 (Incl. 76A)
Jackson Products, Warren, Mich.	71-72
Lukens Steel Co., Coatesville, Pa.	68-70
Magnaflux Corp., Chicago	4-5
Marquette Mfg. Co. Inc., Minneapolis	141
Metal Goods Corp., Houston	79
Metal & Thermit Corp., New York	65-67
Miller Electric Mfg. Co., Appleton, Wis.	50
Mir-O-Cel Alloy Co. Inc., Los Angeles	137-138
National Cylinder Gas Co., Chicago	10-15
National Diamond Laboratory, New York	142
National Torch Tip Co., Pittsburgh	134
Nelson Stud Welding Division, Gregory Industries Inc., Lorain, O.	98-99
Page Steel & Wire Division, American Chain & Cable Co. Inc., Monessen, Pa.	146
Pandjiris Weldment Co., St. Louis	26-27
Cecil C. Peck Co., Cleveland	43-44
Permalatem Welding Alloy Co., Red Bank, N. J.	123
Purnell Alloy Co.	143
J. M. Ragle Industries, Kansas City	136
Resistance Welder Manufacturers Assn., Philadelphia, Pa.	1-2
Service Diamond Tool Co., Ferndale, Mich.	128
Smith Welding Equipment Corp., Minneapolis	93-94
Sonoflux Corp., Houston	135
Steody Co., Whittier	81-85
Sylvania Electric Products Inc., New York	28
Tempil Corp., New York	125
John Tillman & Co., Long Beach, Calif.	129
Trindl Products Ltd., Chicago	124
Tweco Products Co., Wichita, Kans.	55-56
Union Carbide & Carbon Corp., New York	38-42, 57-61 (Incl. 40A, 59A)
United Specialty Corp., Eldorado, Ark.	131
United Wire & Supply Corp., Providence, R. I.	80
Velocity-Power Tool Co., Pittsburgh	145
Vernon Tool Co. Ltd, Alhambra, Calif.	92
Wagner Mfg. Co. Inc., Jackson, Mo.	132
Wall Colmonoy Corp., Detroit	6
Weiger, Weed & Co. Division, Detroit	102
Welding Alloys Mfg. Co., Newark, N. J.	148
Welding Engineer, New York	Location A
Weldwire Co. Inc., Philadelphia	133
Weltronic Co., Detroit	149
Westinghouse Electric Corp., Pittsburgh	20-25

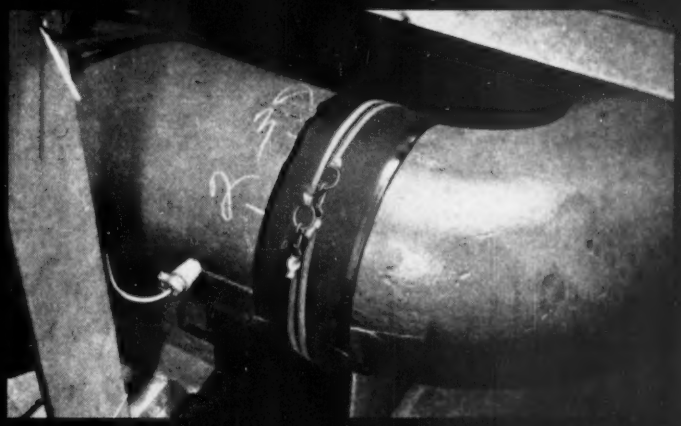
A Welding "First"

An all-welding show for all welding interests is the way American Welding Society describes its combined industry exposition and spring technical meeting set for June 16-19 at the Shamrock Hotel, Houston.

With the extreme concentration of welding interests in the industrial southwest section of the country, it was decided that Houston would be the ideal location for the first expcsition away from the locale of the fall meeting.

Thirty-six technical papers, both local and national in potential will highlight the busy technical sessions. Over seventy leading exhibitors have reserved space in the air-conditioned exhibit hall adjacent to the Shamrock.

AWS chairmen promise a highly potent get-together comprised strictly of welding people, gathered to present, discuss and exhibit the latest in methods and applications.



This joint must carry water at 500°F and 1600 p.s.i.

RADIOGRAPHY says the weld's sound

To gain top efficiency, modern power plants are operating at higher pressures and higher temperatures—conditions which call for utmost dependability in the welded joints of the piping.

Here radiography is invaluable; it alone can prove the soundness of the welds.

In this way radiography has opened new fields to welders. In high pressure piping, in the manufacture of pressure vessels, and in other applications where welding was once banned, it is now an accepted procedure.

Radiography can help you build business as well as earn a reputation for highly satisfactory work.

If you would like to know more about what it can do for you, talk it over with your x-ray dealer.

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Radiography . . .

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AWS National Spring Meeting—Technical Program

HOTEL SHAMROCK—HOUSTON—JUNE 16-19, 1953

TUESDAY, June 16—9:30 a.m.

TWO CONCURRENT SESSIONS

A—WELDING TITANIUM

Shamrock Room

Chairman—Col. Thurston T. Paul
Watertown Arsenal
Co-Chairman—Carl E. Hartbower
Watertown Arsenal

Effect of Atmospheric Contaminants on Arc Welds in Titanium
by J. C. Barrett and I. R. Lane Jr., U. S. Bureau of Mines

Effects of Iron, Manganese, Chromium and Molybdenum on Welds in Titanium
by G. B. Grabee, C. B. Voldrich and G. E. Faulkner, Battelle Memorial Institute

Brazing Titanium
by J. M. Parks and N. A. DeCecco, Armour Research Foundation

B—HUMAN ELEMENTS IN WELDING

Grecian Room

Chairman—T. B. Jefferson
Welding Engineer
Co-Chairman—Lew Gilbert
Industry and Welding

Human Elements and Problems in Welding
by David P. O'Connor, Department of Water & Power, City of Los Angeles

Human Elements in Welding
by R. C. Wiley, California State Polytechnic College

Radiography as an Educational Tool in European Welding Industry
by Hans Vinter, Danish Central Welding Institution

TUESDAY, June 16—2 p.m.

TWO SIMULTANEOUS SESSIONS

C—WELDING TITANIUM

Shamrock Room

Chairman—C. B. Voldrich
Battelle Memorial Institute
Co-Chairman—J. J. Chyle
A. O. Smith Corp.

Brazing and Soldering Titanium With Inert Gases
by Harlan L. Meredith, North American Aviation Co.

Restoration of Ductility in Alloy Titanium Welds
by Allan J. Rosenberg, E. Hutchinson and S. Weiss, General Electric Co.

Spot Welding Titanium—Carbon Alloys
by E. F. Holt and N. L. McClymonds, P. R. Mallory & Co. Inc.; and F. H. Vandenburgh, Mallory-Sharon Titanium Corp.

D—RESISTANCE WELDING

Grecian Room

Chairman—J. H. Cooper
Taylor Winfield Corp.
Co-Chairman—E. L. Buckingham
Chance Vought Aircraft

Flash and Pressure Weld Qualification Tests on 4340 Steel Heat Treated to 260-280,000 psi after Welding
by Mario L. Ochieano, Lockheed Aircraft Corp.

Basis for a Resistance Welding Specification for the Electronic Industry
by Peter G. Poetto, CBS Welding Corp.; Stephen A. Montanaro and Harold Sharney, City Testing and Research Laboratory

WEDNESDAY, June 17—9:30 a.m.

THREE SIMULTANEOUS SESSIONS

A—RESISTANCE WELDING SYMPOSIUM

(Arranged by Technical Activities Committee)

Emerald Room

Chairman—J. J. MacKinney
Budd Co.
Co-Chairman—E. A. Bussard
Coleman Co.

Instrumentation
by C. R. Dixon, Aluminum Co. of America; R. P. C. Rasmusen, Battelle Memorial Institute; C. B. Smith, Douglas Aircraft Co.

Techniques and Welding Schedules
by W. J. Wilson, Kaiser Metal Products

Moderators:
E. B. Morris, Grumman Aircraft Engineering Corp.; A. J. Rosenberg, General Electric Co.; R. P. Becker, International Harvester Co.; M. L. Ochieano, Lockheed Aircraft Corp.

(Continued in afternoon)

B—CONSTRUCTION

Shamrock Room

Chairman—L. F. Megow
A. O. Smith Corp.
Co-Chairman—W. C. Cox
General Electric Co.

Applications of Medium Alloy, High-Strength Steel in Welded Construction
by Howard L. Miller, Republic Steel Corp.; Arthur E. Wilkoff, Youngstown Steel Car Co.

Applications of Plastic Theory
by W. S. Atkins, W. B. Atkins and Partners

C—ALUMINUM

Grecian Room

Chairman—G. O. Hoglund
Aluminum Co. of America
Co-Chairman—Albert Muller
Air Reduction Research Laboratory

Recrystallization Welding
by Jona M. Parks, Armour Research Foundation

Joining Aluminum to Other Metals
by Mike A. Miller, Aluminum Research Laboratories

WEDNESDAY, June 17—2 p.m.

THREE SIMULTANEOUS SESSIONS

D—RESISTANCE WELDING SYMPOSIUM

(Arranged by Technical Activities Committee)

Emerald Room

Chairman—J. J. MacKinney
Budd Co.
Co-Chairman—E. A. Bussard
Coleman Co.

Production Quality Control
by Floyd Mathews, Boeing Airplane Co.

Moderators:
Wilson Scott, Westinghouse Electric Corp.; Harold Robinson, Kaiser Aluminum & Chemical Corp.; Frank G. Harkins, Solar Aircraft Co.; J. B. Houston, Intercontinental Mfg. Co.

Applications
(a) Stainless Steel Aircraft by D. O. Samuelson, Solar Aircraft Co. *(b)* Aluminum Aircraft by C. B. Smith, Douglas Aircraft Co.

E—STRUCTURAL WELDING

Shamrock Room

Chairman—A. Amirikian
Bureau of Yards and Docks
Co-Chairman—H. F. Crick
Mosher Steel Co.

Welded Rigid Connections for Portal Frames
by A. A. Toprac, University of Texas

An Evaluation of Plastic Analysis as Applied to Structural Design
by B. G. Johnston, University of Michigan; C. H. Yang and L. S. Beedle, Lehigh University

Plastic Strength and Deflection of Continuous Beams
by K. E. Knudsen, C. H. Yang and L. S. Beedle, Lehigh University; B. G. Johnston, University of Michigan

F—INERT ARC WELDING

Grecian Room

Chairman—J. E. Dato
Linde Air Products Co.
Co-Chairman—M. G. Wicker
Air Reduction Magnolia Co.

Inert-Arc Welding by the Fillerarc Process
by R. W. Tuthill, General Electric Co.

Stranded Electrode Materials for Aircomatic Welding
by H. Robinson, Kaiser Aluminum and Chemical Sales Co.; H. C. Cook, Air Reduction Research Laboratory

Fusion Welding of Light-Gage Alloys
by Jack T. Maloney, Rohr Aircraft Corp.

THURSDAY, June 18—9:30 a.m.

TWO SIMULTANEOUS SESSIONS

A—STORAGE TANKS AND PIPE LINES

Grecian Room

Chairman—James Earthman
Wyatt Metal & Boiler Works
Co-Chairman—M. E. Holmberg
Metallurgical Consultant

Automatic Field Welding of Girth Joints of Large Storage Tanks
by Percy C. Arnold, Chicago Bridge & Iron Co.

Factors in the Low-Temperature Impact Strength of Carbon Steel
by J. R. Watt, University of Texas; and J. J. Smetana, University of Michigan

Use of Magnaflux for Quality Control of Pipe Line Welds
by George L. C. Dehn, Magnaflux Corp.

B—STAINLESS STEELS

Shamrock Room

Chairman—W. B. Brooks
Dow Chemical Co.
Co-Chairman—M. A. Scheil
A. O. Smith Corp.

Stabilizing Austenitic Chrome-Nickel Weld Metal against Intergranular Corrosion
by H. C. Campbell, Arcos Corp.

Submerged-Arc Welded Vessel Linings
by James G. Kerr and Robert E. Anderson, C. F. Braun & Co.

Reliance Welding of Stainless Steel Piping
by F. J. Pilia, Linde Air Products Co.

THURSDAY, June 18

2:30 p.m. Sightseeing Trip

5:30 p.m. San Jacinto Inn—Fellowship Hour and Cocktails

7 p.m. Captains' Dinner

FRIDAY, June 19—9:30 a.m.

TWO SIMULTANEOUS SESSIONS

A—ARC WELDING APPLICATIONS

Grecian Room

Chairman—A. Wisler
Hughes Tool Co.
Co-Chairman—F. H. Berry
Big Three Welding Equipment

Arc Welding of Ferritic and Austenitic Nodular Cast Iron
by Harry Fisk, Jesse S. Sohn and Willard M. Boam, Wright Aeronautical Division, Curtiss-Wright Corp.

Fusion Welding of Ductile Iron
by T. E. Kihlgren and H. C. Waugh, International Nickel Co. Inc.

Maintenance Welding in the Petroleum Industry
by Don H. Rasmussen, Eutectic Welding Alloys Corp.

B—MARINE STRUCTURES

Shamrock Room

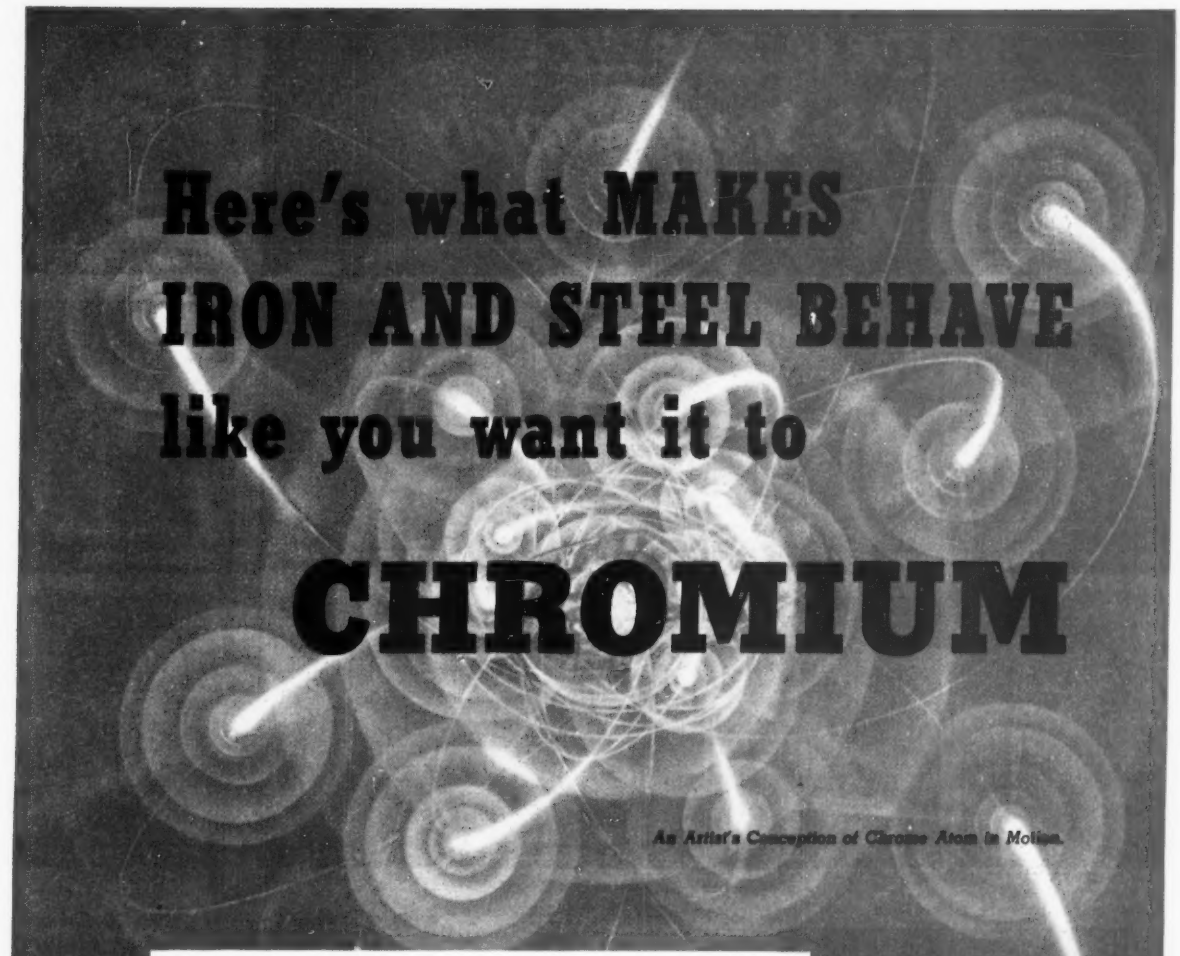
Chairman—E. C. Rechtin
Bethlehem Steel Co.
Co-Chairman—T. J. Dawson
Ingalls Shipbuilding Corp.

Tricky Problems in Welded Ship Repair
by Milton Forman, Todd Shipyards Corp.

Residual Stresses in Welding
by Bela Ronay, U. S. Naval Engineering Experiment Station

Here's what MAKES IRON AND STEEL BEHAVE like you want it to

CHROMIUM



An Artist's Conception of Chrome Atom in Motion.

It is one of the most useful and economical alloying elements available . . .

- to improve mechanical properties
- to secure greater resistance to corrosion
- to improve resistance to wear.

Ohio Ferro Chromium Products

STANDARD HIGH CARBON FERRO-CHROME
65-70% Cr. 4-6% Carbon

LOW CARBON FERRO-CHROME SILICON
33-42% Cr. 40-50% Si.
.06% C. Max.

FOUNDRY GRADE FERRO-CHROME
60-66% Cr. 6-9% Si.
4-5% C.

FERRO-SILICON CHROME
48-52% Cr. 25-30% Si.
1.25% C. Max.

FERRO-CHROME BRIQUETS
3⅜ lbs.
each containing
2 lbs. chromium

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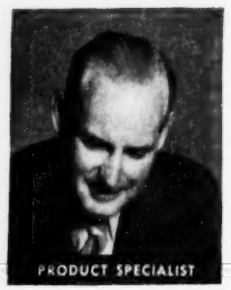
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Contact your U. S. Steel Supply salesman for quick results in regard to credit arrangements as well as for the steel you need now.

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UNITED STATES STEEL

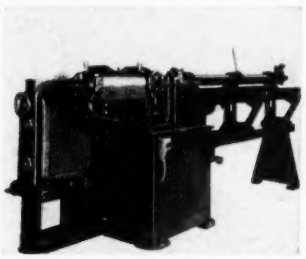
NEW PRODUCTS and equipment

Reply card on page 105 will bring you more information on any new products and equipment in this issue

Wire Straightener, Cutter

. . . feeds 50 to 200 fpm

Variable speed drive geared to feed infinite speed changes from 50 to 200 fpm is engineered into this wire straightening and cutting machine. Model 1AV handles both



basic and spring wire. Diameters from 3/32 to ¼-inch basic wire can be straightened and cut. With simple variable speed drive adjustment, spring wire to ⅛-inch diameter can also be run through.

Variable speed drive enables the operator to compensate for temper, alloy and size differences while maintaining peak productivity. Mettler Machine Tool Inc., Dept. ST, New Haven, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Gas-Operated Electric Truck

. . . no clutch or gearshift

Transmission system that operates without clutch or gear shift gains fuel economy, smoothness of acceleration and simplified maintenance for this fork lift truck. The truck has gasoline engine, a variable-voltage generator and an electric motor as its power system. Key element is the variable voltage generator. As engine revolutions-per-minute increases, voltage output builds up smoothly.

Engine is coupled directly to the generator, which in turn is connected to a drive motor on the drive axle. Travel speed is con-

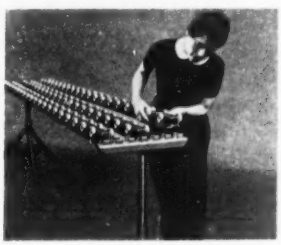
trolled entirely by foot pressure on the accelerator without gears to shift. Operating advantages: Simplicity of electric truck design, speed and 24-hour power availability of gas engine equipment. Manufacturer reports initial tests show a 30 per cent reduction in fuel consumption through operation at optimum rpm. Industrial Truck Division, Baker-Raulang Co., Dept. ST, 1230 W. 80th St., Cleveland 2, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Gravity Wheel Conveyor

. . . separate dismountable rails

Rails with attached wheels are made separate and dismountable



in design of this gravity wheel conveyor. They can be used wherever changing conditions require new setups and where speed of setup is a major problem. Rails are light enough to lift easily and, for installation, are set into special stands that require no fasteners.

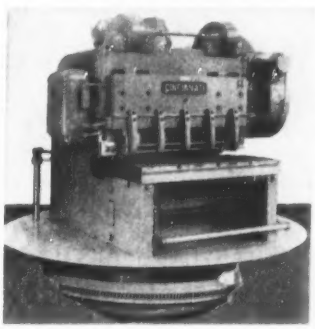
Complete sections are also available. Typical applications are in movement of cartons, crates, sheets, small product pallets, pans and strips. Rails can be combined in any of 18 different wheel patterns, then dismantled and recombined as required. Alvey-Ferguson Co., Dept. ST, Cincinnati 9, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Turntable-Mounted Shear

. . . cuts mild steel 1 inch thick

This all steel shear is capable of cutting mild steel to 1 inch thick and 4 feet long. The shear is mounted on a turntable, rotated by a circular rack and pinion. It is set at different positions to eliminate as much handling of large plates and coiled stock as



possible. The shear can be turned to 90 degrees either side of center.

Model weighs 42,000 pounds and operates at 30 strokes per minute. It is equipped with a hinged back gage angle that permits it to cut plates longer than the back gage

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range. Additional features include a light beam shearing gage, ball transfers in the table and air counterbalances on the ram. Cincinnati Shaper Co., Dept. ST, Hopple, Garrard & Elam Sts., Cincinnati 25, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

General-Purpose Floor Truck

. . . assembled, altered by user

Series of floor trucks is assembled by the user and can be altered to meet changing needs. The units are shipped knocked down, can again be dissassembled for storage. It takes about 5 minutes to put a complete truck together.

End panels slip into sockets in the bottom deck; shelves are added as needed or removed according to

specific loads. All parts are replaceable and interchangeable without fastenings. There are no nuts, bolts, screws, pins or washers. Available in four models, all trucks have 5-inch casters with total capacity of 500 pounds. Leebaw Mfg. Co., Dept. ST, 65 Wayne Ave., Youngstown 2, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Automatic Bar Machine

. . . extended to smaller sizes

Automatic 1¼ and ¾-inch bar machines extend into a smaller size range the rapid setup and preci-

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INFORMATION

AVAILABLE FOR THE ASKING

70. Magnesium Ramps

Penco Engineering Co.—Two types of magnesium ramps for car and truck loading are described in data sheet. They are available in a range of over 70 standard sizes. Car ramps have capacities from 3000 to 10,000 lb, and truck ramps from 1000 to 5000 lb. All types are lightweight, and can be easily handled by one man.

71. Coupling Boring Machines

Wm. K. Stamets Co. — Coupling boring machines which simultaneously bore and face pipe couplings and similar taper and straight bored work ranging in size from 2¾ to 13¾ in. OD pipe are subject of descriptive 4-page bulletin No. 100-B.

72. Surface Active Agents

E. F. Houghton & Co.—A guide to speed processing and lower production costs, this 8-page illustrated bulletin lists many metalworking applications that can make use of surface active agents. Benefits derived, helpful suggestions and chart of physical properties are included.

73. Corrosion Control

D. W. Haering & Co.—The particular use of each glucosate made by company for correction and control of corrosion, scale and algae is information presented in unusual folder booklet. Glucosates are now being sold in ready-to-use drums.

74. Speed Reducers

Michigan Tool Co., Cone Drive Gears Div.—Complete specifications for a wide variety of Cone Drive speed reducers are found in 8-page illustrated bulletin 8901-50. Construction features, dimensional drawings and general data are included.

75. Roller Bearings

Berliss Bearing Co.—Complete description and specifications of bearing for materials handling, automotive, agricultural machinery and transportation industries are contained in 16-page illustrated catalog 522. Described are rollers, bearings, roller assemblies, cage and split outer race assemblies. Much bearing selection data are included.

76. Pilot Bearing Bushing

J. G. Jergens Co.—Cut-away and dimensional illustrations, applications and specifications describing a new pilot bearing bushing are featured in 4-page folder. Bushing provides absolute seal against coolants and fine powdered dust and grit.

77. Wire Punches

Dayton Punch & Insert Co.—High speed steel punches in 70 standard sizes between 0.032 and 0.189-in. with lengths of 2½-in. are described in 6-page folder. They are designed to punch closely spaced small diameter holes to high tolerances. Folder quotes prices and quantity discounts and also gives information on special types.

78. Carburizing Baths

A. F. Holden Co.—Seven different carburizing baths, all of which are completely water-soluble, are described in 4-page bulletin. It is stated that distortion can be held to 0.001-in., and that the baths last indefinitely even in continual use.

79. Centerless Grinding

Norton Co.—"The A B C of O.D. Grinding" is title of handy 48-page manual which discusses all phases of cylindrical and centerless grinding. Contents covers the grinding machine selection of the grinding wheel, operating tricks and general information. Tabulated wheel recommendations, performance data, traverse rates and wheel speeds are offered.

6-8-53

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80. Screw Testing Machines

American Machine & Metals, Inc., Riehle Testing Machines Div.—Here, in 28 illustrated pages of catalog RU-4-53, are described a line of screw power universal testing machines offered in capacities from 2000 to 400,000 lb. Construction of components, operating details, specs of each model and instruments and accessories are covered.

81. Wire Rope Handbook

Rochester Ropes — 108-page Sling Handbook illustrates and describes the uses of every important type of wire rope sling. It shows how to select and specify slings for every purpose and how to choose correct fittings. Many charts and tables are included, and there is a special section with step-by-step procedure on how to gage, seize and splice.

82. Fork Truck Operation

Hyster Co.—"How to Operate a Lift Truck" is a comprehensive 24-page illustrated manual for use in training lift truck operators. Not only operational procedure, but preventive maintenance, safety and basic materials handling techniques are covered as well.

83. Aluminum Handbook

Kaiser Aluminum & Chemical Sales, Inc.—152-page informational handbook on aluminum sheet and plate contains a wealth of useful data. Included are applications, fabricating and finishing information as well as comprehensive tables covering mechanical properties. Separate pages are allotted to each standard alloy.

84. O-Ni Generators

Air Products Inc.—"Make Your Own Oxygen and Nitrogen from Air" is title of 12-page illustrated catalog No. 52. Included are features, advantages and specifications for tonnage oxygen-nitrogen generators, high purity oxygen-nitrogen generators and equipment for all other low temperature processes. Flow diagrams are shown.

85. Grinding Wheels

Cincinnati Milling Machine Co.—24-page booklet "A New Concept In Grinding Wheels" gives an inside look into the company research program for the development of better wheels and shows how the manufacturing processes are quality controlled. Fully illustrated, it contains interesting and unique microphotographs.

86. Metalworking Machines

O'Neil-Irwin Mfg. Co.—How Di-Acro metalworking machines perform a wide variety of forming, cutting and punching operations in medium and light-weight materials is told in 32-page illustrated catalog. Machine specs and material forming capacities are tabulated for seven basic units, available in 36 sizes.

EDITORIAL REPRINTS:

87. Rolling Tapered Aluminum

Among the new problems posed to aircraft builders by today's high speed aircraft is development of high tolerance tapered sheet for wing surfaces. J. H. Alden, metallurgist at Aluminum Co. of America discusses progress made developing the art of taper rolling in STEEL reprint "Rolling Tapered Aluminum Isn't Easy."

88. Automatic Galvanizing

In STEEL reprint "Galvanizing Can Be Automatic" L. Baker of Hotpoint Co. describes the hot dip galvanizing method utilized at the company. All steps are handled on a chain conveyor traveling at 5 fpm and require one operator.

89. High-Speed Mill

STEEL reprint entitled "High-Speed Mill Flies Into Aircraft Parts" is descriptive of a superspeed milling machine built by Cincinnati and used at Vultee Aircraft Corp. Machine works on nonferrous parts at speed up to 10,700 rpm and feeds up to 400 ipm. Time saving is one of several advantages.

90. Simplifying Annealing

"Instrumentation Simplifies Annealing" is STEEL reprint by H. C. McKinnon, utilities engineer, Atlas Steel, Ltd., which tells how precise control of fuel mix and temperature in a four-zone sheet and plate furnace at the Canadian plant promotes uniformity in various physical values.

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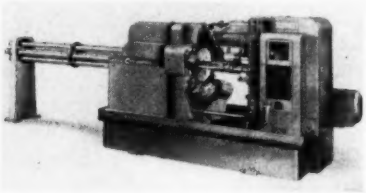
sion working features of the manufacturer's larger models. Machines incorporate quadrant mechanism that eliminates changeable cams. Feed strokes are set simply by positioning trip blocks on cali-



brated quadrant scales. Same principle is applied to cross slide feeds, further simplifying setup.

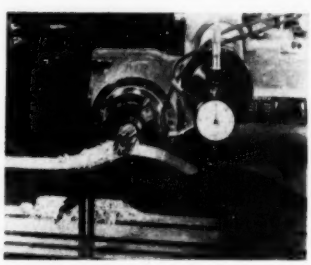
Elliptical-eccentric gears power Geneva indexing mechanism. High-speed unit has six spindles in contrast with five on the larger models. Speed range: 255 to 2781 rpm in the 1¼-inch bar capacity; 372 to 4045 rpm in the ¾-inch model. Working dimensions are similar to those of the larger automatics. Warner & Swasey Co., Dept. ST, 5701 Carnegie Ave., Cleveland 3, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Contour Duplicating Attachment

. . . fits any machine tool

This versatile duplicating attachment is readily attached to the lead screw of almost any machine tool. Called the Contour



Sensor, the duplicator contains an electronic unit sensitive to 0.00002-inch, mounted in a conventional

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IS THERE A STANDARD SIZE SLEEVE BEARING FOR YOUR APPLICATION?
...IF SO

Johnson will save you money

Since there are over 900 standard stock sizes of Johnson GP Bearings available from your local distributor, you have industry's widest selection. Johnson GP (General Purpose) Cast Bronze Bearings are precision made to standard tolerances, in sizes from ¼-inch to 4½-inch inside diameters. There are 213 different ID-OD combinations, and up to 21 lengths of a given size. No pattern and set-up costs are charged on these bearings, so the cost of Johnson GP Bearings is extremely low. Where slight alterations, slots or oil grooves are required, they may be added easily and economically. Ask your local Johnson Distributor for the new catalog . . . or write us for your copy.

JOHNSON BRONZE COMPANY
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Only P&H DIAL-LECTRIC

INSTANTANEOUS REMOTE CONTROL lets you

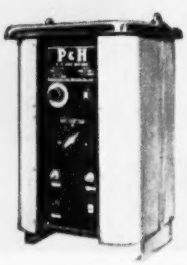
change heat lightning-fast

. . . gives you Inert-Gas Welding at its best, AC and DC

***You get this exclusive P&H feature in* P&H High-Frequency Arc Welders**

A simple turn of a dial or a touch of the toe gives you the heat you call for *right now* — not seconds from now! That's because P&H Dial-lectric Control is electrical, not mechanical. Response is instant — there's no time lag. It's a P&H "exclusive" that boosts production, cuts costs, saves time. And it's just one of the advantages you get with P&H High-Frequency AC and DC Arc Welders, available in sizes up to 625 amps. Ask your P&H representative or distributor for all the facts. Or write us for latest bulletins.

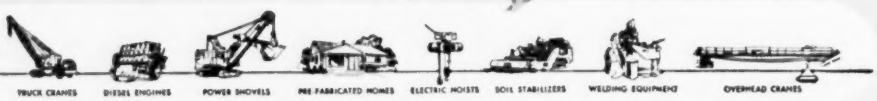
P&H AC Arc Welder



P&H DC Arc Welder

P&H WELDING DIVISION
HARNISCHFEGER CORPORATION
4411 W. National Ave. • Milwaukee 46, Wisconsin

the P&H *Line*



2391

dial indicator case. In operation, changeover from milling machine to engine lathe duplicating can be accomplished in less than 30 minutes.

Effect of the unit's use is to place a versatile and precise duplicator in the tool crib for use on machine tools whenever the need arises. Aerolab Development Co., Dept. ST, 330 W. Holly St., Pasadena 3, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Air Powered Angle Grinder

. . . design eliminates gears

This air-powered direct drive angle grinder operates without gears of any kind. Size 2FA-60 has enough power to provide fast, safe operation on almost all surface

grinding, cutoff and sanding jobs. Speed is 90 psi; air pressure, 6000 rpm. Two types of dead handles are available: One is straight, the other at 30 degrees.

Handles can be attached to either side of the grinder and the angle dead handle can be rotated to any one of four positions. Thus, the tool can be adapted for corner grinding. Ingersoll-Rand Co., Dept. ST, 11 Broadway, New York 4, N. Y.

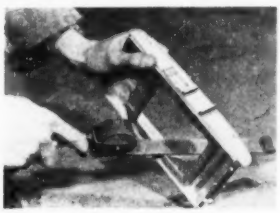
FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Abrasive Surface File

. . . feeds from coated roll

Used like a conventional metal file, this abrasive roll has a cutting surface that feeds from a coated abrasive roll. The file features an 11-inch stroke, holds a roll of more than 6 feet of abrasive cloth to provide a 6-foot cutting surface that is dispensed as needed. Result: A continuous fresh surface and peak cutting efficiency.

Designed jointly by the manufacturer and Minnesota Mining & Mfg. Co., setup means increased file versatility through wide choice of abrasive grits. It is available in



two widths, 1 and 1½-inches, with abrasive cloth utility rolls provided in 50-yard lengths for refills. Monarch Machine Shop Inc., Dept. ST, Madison, Wis.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Adjustable Protractor

. . . draws any number of angles

This adjustable engineers' protractor is a miniature drafting machine in itself. Any number of angles from 0 to 180 degrees can be drawn instantly without turning, sliding or moving the protractor out of position. A magnifier, built-in over the registration mark, produces clear, hairline adjustment.

Often-needed mathematical formulas are printed on the reverse

side of the calibrated dial. A 5-inch rule on the lower arm is an added convenience. Way-Mac Mfg. Co., Dept. ST, 8112 Melrose Ave., Los Angeles 46, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Rust Preventive Compound

. . . improves steel storage

Compound NR-31 prevents rusting on steel, cast iron and other iron alloys during storage. It is mildly alkaline, water-soluble material used in concentration of 1 ounce per gallon, leaving almost no visible film.

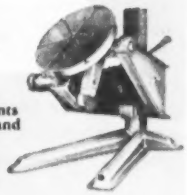
Tests indicate protection in 100 per cent humidity for several weeks. The compound is readily

P&H

the industry's most complete line of cost-cutting welding equipment

P&H POSITIONERS

With one finger, you position heavy weldments for economical downhand welding. Capacities, 2500 to 36,000 lbs. — remote-control and hand-operated models.



P&H LOW-HYDROGEN ELECTRODES

13 types for high-strength welds on problem steels, steel castings, nickel-alloy steels, chrome-moly steels, .40 carbon castings, high-hardenable steels, aircraft and similar steels.

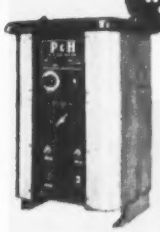
P&H AC WELDER

Exclusive P&H Dial-lectric Remote Control gives you instantaneous heat selection at the work. Sizes up to 625 amps., NEMA rated. Connectable to 220 and 440 volts.

P&H WELDING TWINS

P&H DC RECTIFIER WELDER

Also has P&H Dial-lectric Control, for fingertip heat control. Three sizes, 200, 300, and 500 amps., NEMA rated.



P&H WN-301 ENGINE-DRIVEN DC ARC WELDER

Portable—lets you weld anywhere, anytime. Has P&H Dial-lectric Control. Runs at only 1750 rpm. Welding service range, 60-375 amps., NEMA rated.

Ask your P&H representative or distributor for complete information, or write for free bulletins.

2591A

P&H WELDING DIVISION

HARNISCHFEGER CORPORATION

4411 West National Ave., Milwaukee 46, Wis.

removed by washing with water. Enthone Inc., Dept. ST, 442 Elm St., New Haven, Conn.

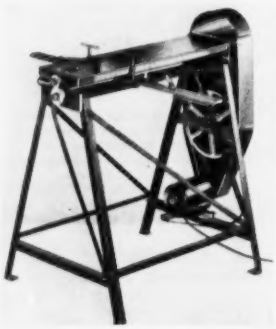
FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Portable Slitting Shear

. . . cuts at 73.3 fpm

This portable metal slitter weighs 118 pounds, consistently cuts to a tolerance of 0.005-inch at 73.3 fpm. It works on 20-gage or lighter mild steel and other metals, such as copper, aluminum and Monel.

The shear incorporates two power-driven hollow-ground edge, high carbon, high chrome tool steel



blades. Bearings are oil impregnated porous bronze. Capacity includes any widths from 1¼ to 24¼ inches, to any length. Wilder Mfg. Co., Dept. ST, Carmel Valley, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Bearing Calculator

. . . fingertip size selection

Information necessary for selecting ball thrust bearings is placed at bearing users' finger tips by this calculating device. Circular sliding scale converts load, speed and life as required for any

given application into terms of rated bearing capacities. Result is selection of proper size for application under consideration without tedious pencil-and-paper calculations.

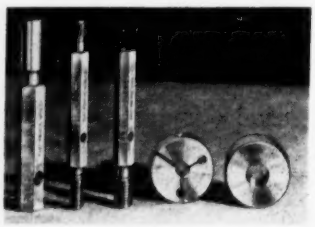
Made in convenient handling size, the calculator is available free. Aetna Ball & Roller Bearing Co., Dept. ST, 4600 Schubert Ave., Chicago 39, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Expanded Gage Line

. . . alloy-protected surfaces

Electrolized gages are an addition to the manufacturer's line, designed to gain longer life through application of an even film of hard,



nonmagnetic alloy to all gaging surfaces. This 0.000025-inch thick coating imparts a tough surface reported to be harder than tool steel.

Gage surfaces are sufficiently smooth to reduce friction to a minimum. They possess a high degree of resistance to corrosion. Being extremely tough, surface will not chip, peel, or spall under normal gaging conditions. Taft-Peirce Mfg. Co., Dept. ST, Woonsocket, R. I.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Traveling Light Vacuum Frame

. . . makes large-size copies

Available in various sizes to 8 feet wide by 2 feet, 10 inches long, this traveling light vacuum frame is applicable for broad industrial usage. It is a completely self-

contained printing frame, except for lamp transformers, for exposing all light-sensitive materials. A variable speed light source provides uniform light distribution by means of complete focal plane sweep. All operations are performed without manipulation of the frame proper.

It is possible to make exact reproductions of drawn parts on glass cloth, sheet metal and other mediums. Need for duplicates of master drawings can be satisfied easily. Reproductions from drawings can be made on steel plates 1-inch thick for dies or other forms for tooling. Charles Bruning Co. Inc., Dept. ST, 4700 Montrose Ave., Chicago 41, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Bench-Type Test Chamber

. . . covers extreme range rapidly

High-low temperature bench-type test chamber is capable of extreme temperature ranges within a relatively short time. Temperatures on the standard unit range from minus 80 to plus 185° F. Rapid temperature pull-down to minus 80° F requires about 30 minutes.

Test chamber dimensions are 12

x 12 x 12 inches. Heat application is accomplished through reverse cycle refrigeration which eliminates hazards associated with open heating elements. Controls formerly necessary are eliminated. Industrial Freezer Division, Webber Mfg. Co. Inc., Dept. ST, 2740 Madison Ave., Indianapolis 3, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Portable Electric Jig Saw

. . . does the work of four

This portable electric unit will do the work of a jig saw, sabre saw, keyhole saw, plus most band saw operations. It can be held and guided with one hand easily. Five different types of blades cut ferrous and nonferrous metals and plastics.

In addition to its portable application, the unit can be mounted in a few minutes in an accessory table for bench work. Black & Decker Mfg. Co., Dept. ST, Towson 4, Md.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

matchless performance

when the chips are down!

High Speed Steels

BY **Vanadium-Alloys**

VASCO SUPREME — Highest hardness, highest wear resistance, supreme in the field. (U.S. Pat. 2174286).

NEATRO — Resistance to abrasion exceeds all steels except Vasco Supreme. Excels for both heavy and light cutting.

VAN CUT — High carbon, high vanadium. Properties intermediate between Vasco M-2 and Neatro for easier grinding. Suitable for all types of cutting tools.

RED CUT SUPERIOR — The nation's best known general-purpose steel. Readily fabricated and heat treated. Shines in a host of applications.

VASCO M-2 — The original 6-6-2 type steel. Wide hardening range, good machining characteristics, outstanding economy in service.

8-N-2 — Low tungsten, high molybdenum, very tough at high hardness. Excels for fine edged tools.

VAN-LOM — High molybdenum, high vanadium. Best cutting performance of all high molybdenum steels.

Write for your free copy of our comprehensive HIGH SPEED STEELS Catalog — grades, applications, heat treatment — helpful, complete!

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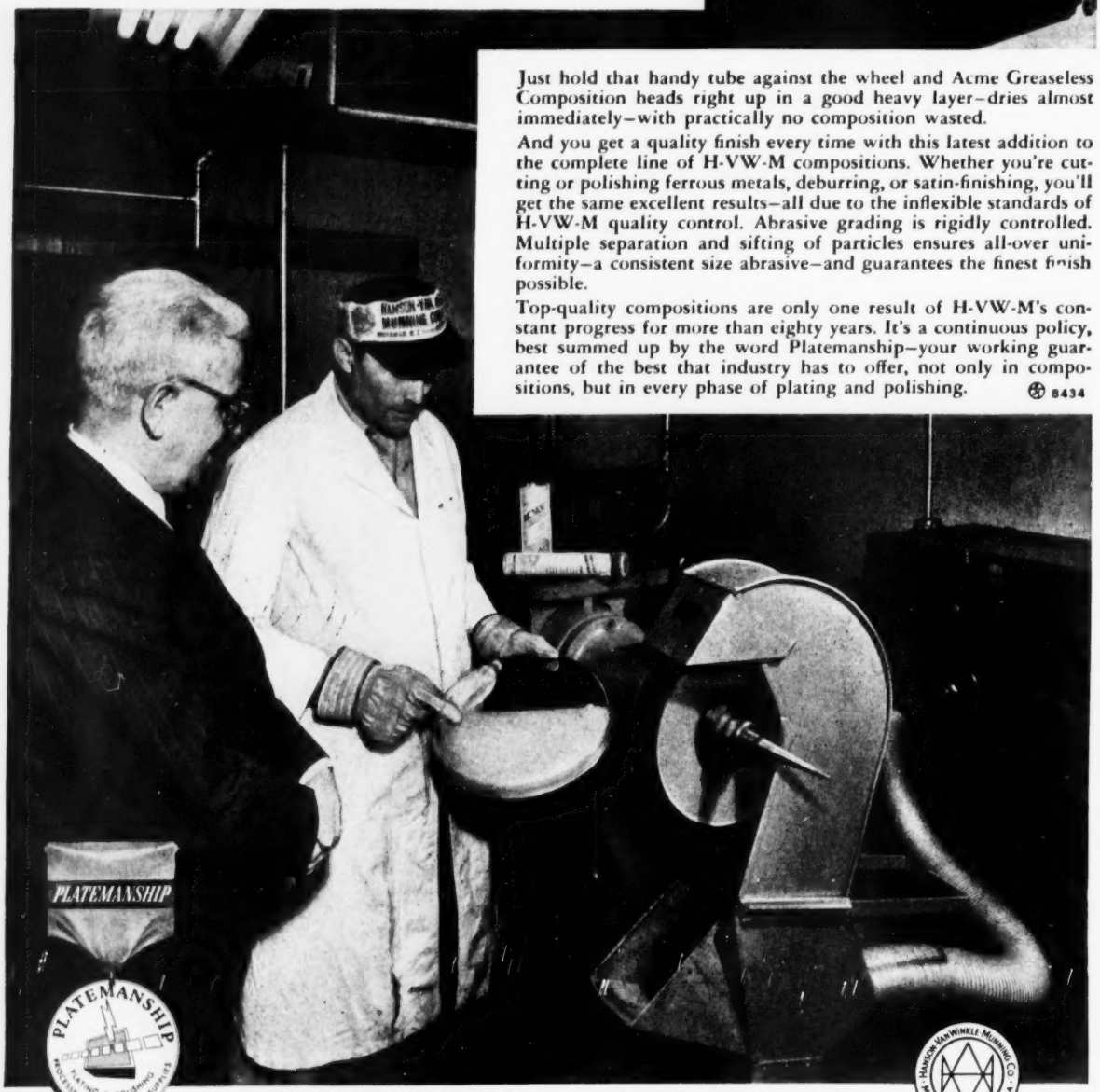
STEEL COMPANY
LATROBE, PA.
COLONIAL STEEL DIVISION • ANCHOR DRAWN STEEL COMPANY

seeing is believing with this new ACME Greaseless Composition

Just hold that handy tube against the wheel and Acme Greaseless Composition heads right up in a good heavy layer—dries almost immediately—with practically no composition wasted.

And you get a quality finish every time with this latest addition to the complete line of H-VW-M compositions. Whether you're cutting or polishing ferrous metals, deburring, or satin-finishing, you'll get the same excellent results—all due to the inflexible standards of H-VW-M quality control. Abrasive grading is rigidly controlled. Multiple separation and sifting of particles ensures all-over uniformity—a consistent size abrasive—and guarantees the finest finish possible.

Top-quality compositions are only one result of H-VW-M's constant progress for more than eighty years. It's a continuous policy, best summed up by the word Platemanship—your working guarantee of the best that industry has to offer, not only in compositions, but in every phase of plating and polishing. 8434



For technical information on buffing compositions ask for Bulletin C-100.

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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H-VW-M

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CALENDAR
OF MEETINGS

June 7-12, Society of Automotive Engineers: Annual summer meeting, Hotels Amba sador and Ritz-Carlton, Atlantic City, N. J. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

June 8-9, Malleable Founders Society: Annual spring meeting, The Homestead, Hot Springs, Va. Society address: 1800 Union Commerce Bldg., Cleveland. Secretary: Lowell D. Ryan.

June 9-12, National District Heating Association: Annual meeting, Hotel Lookout Mountain, Chattanooga, Tenn. Association address: 827 N Euclid Ave., Pittsburgh 6. Secretary-treasurer: John F. Collins Jr.

June 11-12, Machinery & Allied Products Institute: Washington conference, Statler hotel, Washington. Association address: 120 S. LaSalle St., Chicago 3. President: W. J. Kelley.

June 12, Eastern States Blast Furnace & Coke Oven Association: Annual spring meeting, Edgewood Country Club, Pittsburgh. Secretary-treasurer: H. C. Cox.

June 14-19, National Association of Cost Accountants: Annual meeting, Hotel Statler, Los Angeles. Association address: 505 Park Ave., New York 22. Secretary: Arthur B. Gunnarson.

June 15-18, Radio-Television Manufacturers Association: Annual meeting, Palmer House, Chicago. Association address: 777 14th St. NW, Washington 5. Secretary: James D. Secrest.

June 15-18, American Electroplaters' Society: Annual meeting, Benjamin Franklin hotel, Philadelphia. Society address: 445 Broad St., Newark, N. J. Secretary: D. Gordon Foulke.

June 15-19, Basic Materials Conference and Exposition: Grand Central Palace, New York. Information: Banner & Greif, New York 19.

June 15-19, American Institute of Electrical Engineers: Summer general meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

June 16-19, American Welding Society: National spring technical meeting & welding and allied industry exposition, Shamrock hotel and Hall of Exhibits, Houston. Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.

June 17-19, American Management Association: General management conference, Hotel Statler, New York. Association address: 330 W. 42nd St., New York.

June 18-20, American Society of Mechanical Engineers, Applied Mechanics Division: Applied mechanics conference, University of Minnesota, Minneapolis. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 22-25, National Industrial Advertisers Association: Annual meeting, William Penn hotel, Pittsburgh. Association address: 1776 Broadway, New York. Executive secretary: Blaine G. Wiley.

June 22-27, Railway Supply Manufacturers Association: Exhibit and convention, Atlantic City. Association address: 60 E. 42nd St., New York 17. Secretary: A. W. Brown.

June 28-30, Alloy Casting Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 32 Third Ave., Mineola, N. Y. Secretary: E. A. Schoefer.

June 28-July 2, American Society of Mechanical Engineers: Semi-annual meeting, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

June 29-July 3, American Society for Testing Materials: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society address: 1916 Race St., Philadelphia. Secretary: Robert L. Painter

July 6-17, Summer Course in Product Design: Massachusetts Institute of Technology, Cambridge 39, Mass. Information: Director of Summer Session, Room 3-107, MIT.

July 23-24, Truck-Trailer Manufacturers Association Inc.: Annual summer meeting, Edgewater Beach hotel, Chicago. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

SMALL STAMPINGS

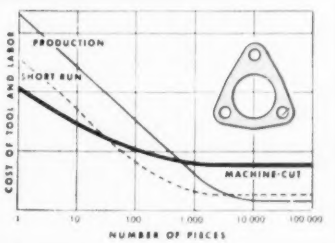
A COST-SAVING, VERSATILE APPROACH TO THEIR MANUFACTURE

Possibly you've always thought that a quick look at the quantity involved decides how a stamping shall be made Sometimes it is done that way but it isn't the sure way to lowest costs.

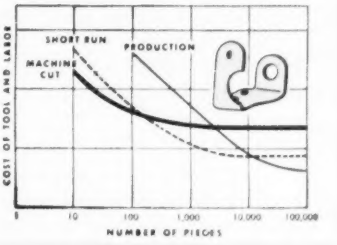
A more scientific approach by the STAMPINGS DIVISION of the Laminated Shim Company in Glenbrook, Connecticut frowns on the term "short run stamping." There is what is known as the short run *method* but there is no definite dividing point between short run and production quantities Contour, tolerances, material, many other items all affect the manufacturing method when costs are being carefully figured.

NO ONE METHOD IS ALWAYS CHEAPEST; THREE ARE NEEDED

Machine-Cut Method: The STAMPINGS DIVISION goes one step further than Short Run and Production Methods The Machine-Cut Method, though not strictly a stamping operation is a valuable addition to stamping procedure Custom built slitters, cutters, saws and files use experience-gained techniques to fashion the smaller quantities of parts. No dies are made; only stock punches are used. Obviously labor cost is understandably high but there is no tool charge.



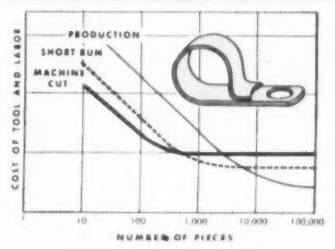
Short Run Method: As quantities increase (and depending upon the complications of contour, material, etc) the economy of a temporary blanking die must be considered to eliminate the labor expense of machine-cutting. When this point is reached, manufacture is by the Short Run Method and the blanking is supplemented by other bench press operations. Here labor cost is at a medium level but a modest tool charge is incurred.



Production Method: As quantities increase the Production Method using standard dies with high speed automatic presses becomes more attractive. A relatively high tool charge can then be amortized over a great number of parts. Labor charge is negligible.

The Production Method as developed by the STAMPINGS DIVISION is offering unusual cost saving possibilities because of the new low-cost, full service Hecht-type die developed by the company for certain applications

It is interesting to note that sometimes a very small quantity of parts would require a standard die because of complications or close tolerances or tough materials involved. Thus occasionally a very small quantity goes into the production classification.



LOWEST COST IS ASSURED WHEN SUPPLIER HAS ALL THREE METHODS

The illustrations show typical stamped parts along with relative costs and breaking points for each of the three manufacturing methods. Unless a supplier can offer all three, his costs cannot always be low. For a given quantity, only *one* method can be most economical.

ONE OR ONE MILLION PARTS FROM SAME SUPPLIER

An important corollary to the above is that an experimental part in small quantities can be handled by the same supplier when full production quantities are needed

Further, it is important that a supplier be fully informed, if possible, on later or total requirements for a given part. As the charts point out, such information will affect manufacturing method and make possible cost reductions.

FURTHER INFORMATION AVAILABLE

An illustrated 12 page brochure describing in greater detail the methods mentioned above is available on request to the

STAMPINGS DIVISION
Laminated Shim Company, Inc.
3406 Union Street, Glenbrook, Conn.

Abstracts of American Electroplaters' Society Papers

Benjamin Franklin Hotel—Philadelphia, June 15-18, 1953

Monday, June 15, 2 p.m.

Bright Gold Plating

by Edwin C. Rinker, Sel-Rex Precious Metals Inc., Belleville, N. J.

This paper presents the industrial requirements and applications for bright gold plating. Principles, bath composition and plate distribution are discussed. Bright and conventional electrodeposits are compared with respect to corrosion and abrasion resistance, smoothness and hardness.

Statistical Quality Control—A New Tool for the Electroplater

by Ezra Blount, Products Finishing, Cincinnati.

Principles of statistical quality control are finding increasing acceptance in the electroplating industry. Author discusses applications with respect to variables controlled and plating plants employing such control methods. It is shown that a reduction in number of rejects as well as savings in metal can be accomplished.

A Corrosion Study of Various Chromium-Plated Electrodeposits

by Henry Brown and E. W. Hoover, Udylite Corp., Detroit.

Results are presented for outdoor (industrial atmosphere) exposure, salt-spray and humidity tests on electrodeposits as foils and when plated on steel, nickel, copper, nickel-cobalt, nickel-iron, white brass with and without a final chromium plate; then are compared and discussed in terms of inherent and induced porosity.

Iron Plating from an Alkaline Bath

by Edward F. Foley Jr., Henry B. Linford and Walter R. Meyer, Columbia University, New York, and Enthone Inc., New Haven, Conn.

An alkaline iron electroplating solution is described. Composition of solution is given and effect of varying the concentration of constituents and temperature on cathode efficiency and operating characteristics are shown.

Tuesday, June 16, 9 a.m.

Black Chromium-Base Electroplating

by Martin F. Quaely, Westinghouse Electric Corp., Bloomfield, N. J.

Black chromium finishes which have good adherence, can be easily applied and heated in high vacuums to 500° C, are required in industry. Three baths can yield deposits to meet these conditions as described in detail with regard to composition and operating conditions.

Crack-Free Chromium—A New Process

by R. Dow and J. E. Stareck, United Chromium Inc., Detroit.

A process for producing crack-free chromium electrodeposits is described. The plating characteristics of the process and the results of outdoor exposure and salt-spray corrosion tests on steel plated by the process, with and without undercoatings, are reported. Other physical properties are reviewed and illustrated.

Cost Determination in the Industrial Chromium Plating Job Shop

by W. F. Walton and P. B. Lonsbury, Walton & Lonsbury, Attleboro, Mass.

Authors describe a method of price determination successfully used in an industrial chromium plating job shop. This method, based on a plating tank-hour charge, has variations to adapt it to the special conditions encountered in depositing heavy chromium coatings. The method described is adaptable to small or large operations.

Stability of Ion-Exchange Resins Toward Chromic Acid Plating Solutions

by C. Frederick Paulson, Permutit Co., New York.

A new cation-exchange resin which is resistant to 40 per cent chromic acid solutions is reported in contrast to earlier resins which were unstable above 10 per cent chromic acid. A description of an ion-exchange unit for service with concentrated chromic acid solutions is given and operating data presented. Stability of anion-exchangers is also discussed.

Tuesday, June 16, 2 p.m.

A Study of Cyanide Decomposition

by E. J. Serfass, R. F. Muraca and Walter R. Meyer, Lehigh University, Bethlehem, Pa., and Enthone Inc., New Haven, Conn.

This paper evaluates the factors responsible for the loss of cyanide from cyanide plating solutions and presents methods of minimizing these losses. Formation of carbonate, cyanate, ammonia and formate are discussed.

An Evaluation of Carbonate Removal Methods

by R. Scott Modjeska, Scientific Controls Laboratory, Chicago.

This paper presents a study of freezing-out and precipitation methods for removal of carbonate from copper, silver, zinc, cadmium and brass cyanide plating baths. Evaluation of the method is based upon type of deposit obtained after treatment and difficulty of treatment.

A Further Study on the Effect of Abrasive Metal Polishing on the Character of Nickel Plate

by Walter L. Pinner, Houdaille-Hershey Corp., Detroit.

By means of photomicrographs, the character of steel surfaces created by various abrasive polishing procedures is shown and effect of such surfaces on quality of electrodeposited nickel is discussed with respect to smoothness, buffability and corrosion resistance. Beneficial effect of certain electrochemical treatments with respect to removal of fragmented particles prior to plating is discussed.

Plating On Molybdenum

by A. Korbelak, *PLATING*, Newark, N. J.

A thin protective metal coating is required over molybdenum because of its poor oxidation resistance at elevated temperatures. Various methods used for production of adherent electrodeposits over molybdenum are described. Industrial applications of electroplated molybdenum are mentioned.

Wednesday, June 17, 9 a.m.

An Electronic Thickness Gage

by Abner Brenner, National Bureau of Standards, Washington.

An electronic thickness gage based upon the skin effect is described. This method is applicable to a large variety of coatings on basis metals if the coating and basis metal differ in conductivity, e.g., silver on brass or lead on copper. The measurements are nondestructive.

Thickness of Electrodeposits by the Anodic Solution

by C. F. Waite, King-Seeley Corp., Ann Arbor, Mich.

This paper describes the difficulty experienced using the hydrochloric acid drop test for chromium over copper. It also details a test unit which was developed for thickness measurements based on the principle of electrolytic solution or stripping of a definite area of plate by known amount of current. This method gives results accurate to plus or minus 5 per cent. Other applications of the method are discussed.

18 Delta drill presses work interchangeably on several materials. Additional machines, set up ready for use, can be moved in and out of the line. Simple fixtures and Delta accuracy make jobs practically fool proof on machines that almost "run themselves."

Down Go Costs

WHEN ASTATIC CORP. PUTS **DELTA TOOLS** ON JOB

These Production Ideas Will Work for You, Too!

Here's how the Astatic Corp., Conneaut, O., manufacturer of microphones, radio, phonograph and television parts, gets high production and high precision at low cost with a shop full of Delta tools—drill presses, grinders, metal cutting bandsaws, and abrasive finishing machines.

FLEXIBILITY—

Because Delta tools are light and mobile, Astatic takes them to the material, cutting handling costs; moves them, already set up, in and out of the production line as jobs change. Five different materials from steel to plastics are machined on the same Delta tools.

INTERCHANGEABILITY—

By standardizing on Delta, Astatic uses the same jigs and fixtures on several machines without adjusters.

FEWER SET-UPS—

By keeping machines set up for special jobs, one operator can tend several machines and do sequence operations. No waste motion. Because Delta tools are a low capital investment, they don't have to run constantly to pay out.

QUALITY—

Most of the Delta tools at Astatic have been on the job six to nine years with only routine maintenance—proving that Delta gives you machine tool quality at a cost any production operation in your plant will justify.

Do you have an up-to-date catalog of Delta tools? Call your Delta dealer. He's listed in your Classified Phone Book under "Tools", or write for Catalog AB, Delta Power Tool Division, Rockwell Manufacturing Company, 638F N. Lexington Ave., Pittsburgh 8, Pa.

DELTA QUALITY POWER TOOLS

Another Product by **Rockwell**

HOW TO SOLVE HOT SPOTS

(UP TO 2200° F)

in products and processes

If improvement of your product or process depends upon use of extremely high temperature, while minimizing its destructive effects, use Kentanium at the critical points.

WHAT is Kentanium?

Chiefly titanium carbide (and small percentages of other refractory metal carbides), with nickel "binder". Uses neither tungsten nor cobalt. Hardness: Up to 93 RA. Weight: ⅔ that of steel.

WHAT can it do?

Resist thermal shock, withstand oxidation and abrasion, retain great strength at high temperatures (1800°F and above).

WHERE is it in use?

Successful applications include: Valves, valve seats, reduction crucibles, anvils for spot welding, hot extrusion die inserts, bushings, thermocouple protection tubes, flame tubes, furnace tong tips, balls for hot hardness testing, nozzle vanes and blades for jet engines, and many others.

WHAT forms are made?

Tubes, rods, bars, flats by extrusion process. More complex parts by machining from pressed slugs before sintering; extremely accurate parts by grinding to required tolerance after furnace sintering.

HOW can you use it?

This remarkable new metal, available in many "grades" to meet specific combinations of imposed conditions, can best be adapted to your high temperature problem by cooperative effort. Our engineers will be glad to discuss how you can get best results from Kentanium.

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KENTANIUM

HEAT-RESISTANT, HIGH-STRENGTH, LIGHTWEIGHT CEMENTED TITANIUM CARBIDE

See KENTANIUM demonstration—Basic Materials Show, N. Y.—SPACE 59C

Electroplaters' Abstracts

(*Continued from p. 114*)

Thursday, June 18, 9 a.m.

Testing Organic Finishes and Interpretation of Results

by C. O. Hutchinson, Glidden Co., Chicago.

Author describes tests which should be made on organic finishes on the basis of various properties needed in varying degrees for any organic coating application. Organic finishing systems are evaluated on the basis of the interpretation of test results.

(Abstracts below are not those to be printed in the convention Program)

A. E. S. Research Program

by Dr. Donald Price, Oakite Products Inc., New York.

Chairman of the research committee discusses the committee's activities during the past year, reviewing problems and accomplishments.

Analysis of Electroplating Solutions for Major Constituents

by Dr. E. J. Serfass, Lehigh University, Bethlehem, Pa.

Analytical procedures for determining major constituents in plating solutions evaluated as part of the work of A.E.S. Project No. 2 are reviewed. New methods developed as the result of this work are described.

Effect and Removal of Chromium from Nickel Plating Solutions

by D. T. Ewing and C. J. Owens, Michigan State College, E. Lansing, Mich.

Effect of chromium as an impurity in nickel plating solutions is discussed and methods of removal described. The effect of chromium in the bath on physical properties of the electrodeposit are reported.

A Metallographic Study of Some Steels Used for Nickel Plating

by Dr. A. E. R. Westman, Ontario Research Foundation, Toronto.

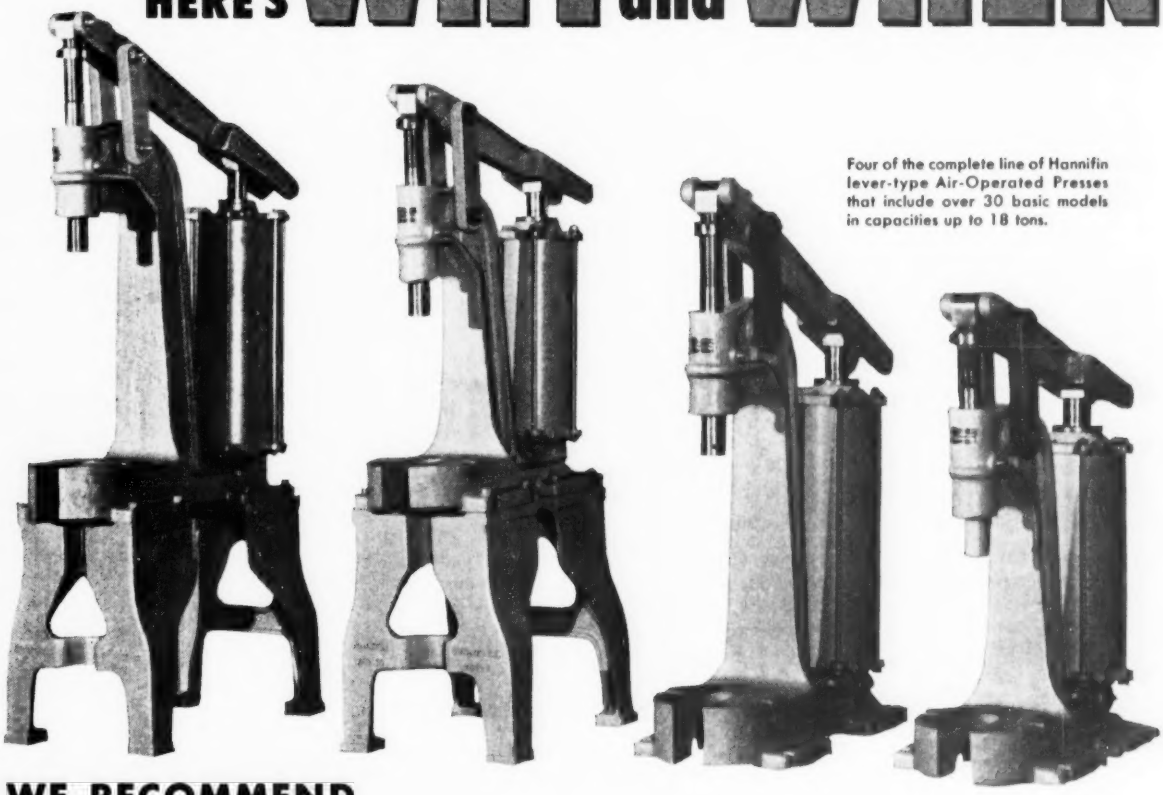
Various types of steel encountered by the electroplater are described and photomicrographs shown. Results of a study of surface finishes of various profilometer readings are given and the structure of the steel immediately below the polished surface reported.

A Progress Report on the Development of a New Accelerated Corrosion Test

by W. L. Pinner, Houdaille-Hershey Corp., Detroit.

The author reviews the need for an accelerated corrosion test to more clearly show in a short time what may be expected to occur in normal exposure. The steps taken to accomplish this under A.E.S. Research Project are reported.

HERE'S WHY and WHEN



Four of the complete line of Hannifin lever-type Air-Operated Presses that include over 30 basic models in capacities up to 18 tons.

WE RECOMMEND

HANNIFIN AIR PRESSES

. . . ***for Production Operations*** involving assembly, marking, staking, riveting or punching of small parts. Hannifin ½ and 1-ton air presses are fast, safe and economical . . . in both initial cost and operating cost.

. . . ***for Bigger Pressing Operations*** where infrequent use would not warrant the purchase of a hydraulic press. Hannifin lever type air presses are low in first cost . . . assure efficient, uniform work . . . are far more economical to operate than out-moded manual presses.

Select the press you need from the complete Hannifin line of air presses. All operate off ordinary shop air supply. There are over 30 basic models from which to choose, many for either bench or floor mounting. Capacities range from ½-ton to 18 tons . . . ram strokes up to 15 inches . . . daylight to 46 inches . . . reach to 12 inches.

Hannifin Series M ½ and 1-ton Air Presses. Supplied with or without electric valves for push button operation.

Hannifin Series A ½ and 1-ton Air Presses. Notice these have adjustable gap.

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Since installation of these overhead conveyors, transition liners are carried throughout the production area in automatic sequence. Employees have easy access without having to reach, wait or look for the next part during assembly

Raised System Telescopes Part Production

Space and manpower saving, improved quality and reduced handling time all followed when this part conveyor system began operating. Even drives are mounted overhead

POWERED overhead conveyor systems telescoped production of two jet engine components into about one third the space Ryan Aeronautical Co. used for the job previously. Formerly occupying 9000 sq ft of factory floor area, jet engine combustion chambers and transition liners now are produced in a tidy 3456 sq ft.

In addition to impressive space-saving, the continuous conveyors generate other important advantages. Parts handling time has been cut by two-thirds. The same production can be accomplished with 13 per cent less manpower and the company says parts quality is improved.

Both components are made in adjacent areas by similar methods. Formed sections are mated and spot-tacked together in exact alignment. Ryan employs specially-designed welding machines which align and spotweld the assemblies in one operation. Then, parts are permanently welded at their seams by resistance seam welding machines. Fittings and reinforcing members are welded on and assemblies are rounded and sized in expanding mandrels. Finally, the completed components are inspected, marked and boxed for shipment. These requirements necessitate considerable parts handling.

Before and After — Before the conveyor systems were installed, combustion chambers were transported in standard tote boxes that had to be rolled from one station to another. Transition liners, being smaller, were placed upon large flat tables on top of the boxes to bring them within reach of workers. These parts handling devices occupied substantial amounts of floor space and required constant supervision.

Methods engineers analyzed the project and developed the production layout utilizing overhead conveyors. This technique has dual space-saving features: It brings parts to all employees in an unbroken, uniform flow, eliminating tote boxes, and groups machines more closely together. By locating conveyors overhead, a previously untapped source of space is pressed into service and floor area is conserved.

Design—Made by Miller Crane & Conveyor Co., Los Angeles, the conveyors incorporate two continuous chains 165 feet and 124 feet long. They roll on universally-coupled ball bearing assemblies spaced out at 8-inch intervals. Parts are carried on steel hooks that dangle from the chains. The entire system is suspended from the factory roof structure by steel supports.

Power for the conveyors is supplied by electric motors, also mounted overhead, which are geared to drive the conveyors at required speeds. Jet components lend themselves to this type of conveyor system because they are small and lightweight enough to be lifted to and from an overhead attachment.

As the conveyors thread the parts to each station, employees have easy access to them without having to reach, wait or look for the next assembly. No confusing array of parts batches surrounds the employee or poses questions concerning their disposition. Every component arrives in its proper sequence. None can be misrouted or lost.

Results — The system has reduced delays in getting parts to each fabrication station and stimulates a more uniform flow of parts through the department. As a result of sizable parts handling savings, the same production can now be accomplished with 13 per cent less manpower, says Ryan. This saving in time can be credited to the conveyor systems, according to the company, because all fabrication methods are the same as before the installation was made.

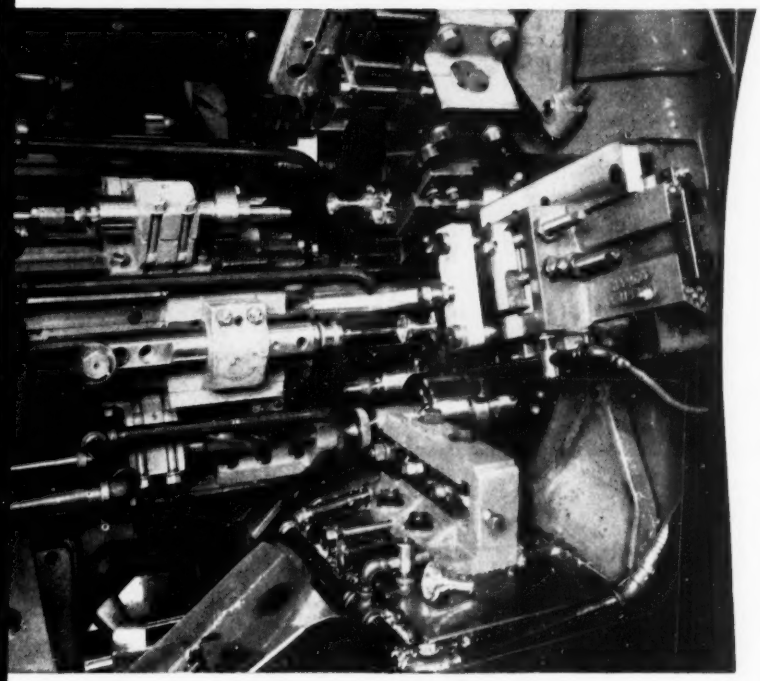
Parts quality also shows effect of the new setup. Improved quality, the company says, results because each component is handled individually, not placed close to others where jostling can cause scratches or other blemishes.

how to add---

more operations on the same machines

without increasing

the time . . . .

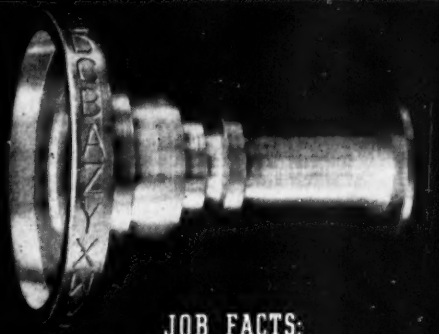


TO REDUCE COSTS

The stencilled letters on this piece are now done by a geared attachment operating in one of the regular tool positions on a Standard Acme-Gridley 6 spindle Bar Automatic. Previously, this "extra operation" had required rehandling the piece at an added investment for machine, floor space and costly operating man-hours.

This example again emphasizes two important advantages which have been developed to a singularly high degree in

Acme-Gridley **MULTIPLE SPINDLE BAR AUTOMATICS**



JOB FACTS:

PART: Type Guide Wheel.

SIZE: 1 5/8" dia. x 1 3/8" long.

MATERIAL: 24S-T aluminum rod.

OPERATIONS: 19 operations on 6 outside diameters, 5 inside diameters — including geared type stencilling attachment, reaming and shaving attachments for fine finish all over.

TOLERANCES: on second shoulder behind stencil section .0005; on 5/16" reamed hole entire length of piece, .001.

MACHINE TIME: 17 seconds, 212 per hour, on 2" six spindle Acme-Gridley Bar Automatic.

ADAPTABILITY—basic machine design provides for simultaneous use of a wider variety to tools and attachments than found in any other bar automatic.

TOOLING INGENUITY—alertness to conceive new attachments and tools arranged in more combinations to perform more operations, backed by an unmatched experience in tooling more than 45,000 Acme-Gridley automatics—eliminates work rehandling costs.

Ask Acme-Gridley tool engineers for modern tooling recommendations—then compare for *time* and *costs*.

The NATIONAL ACME COMPANY

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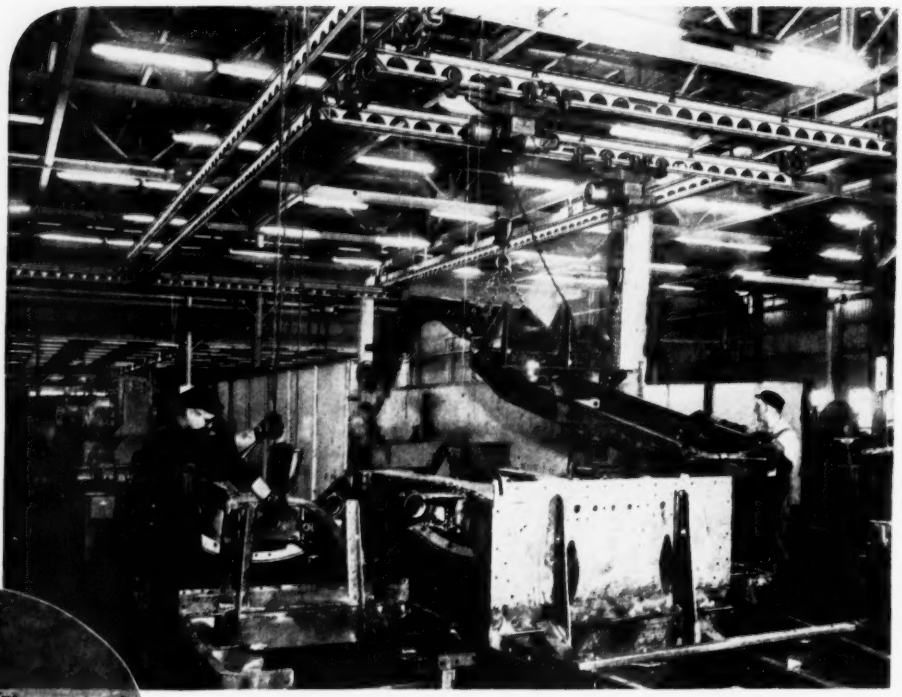
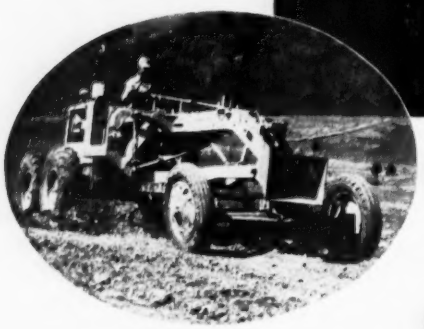
Acme-Gridley Bar and Chucking Automatics, 1-4-6 and 8 Spindle —Hydraulic Thread Rolling Machines—Automatic Threading Dies and Taps—Limit, Motor Starter and Control Station Switches—Solenoids—Contract Manufacturing.

Remember—Industry can't do **TODAY'S** job . . . with **YESTERDAY'S** tools . . . and be in business **TOMORROW**



A hand-propelled interlocking crane system with two-ton electric hoists makes the handling of heavy parts easy in the Motor Grader Frame Assembly Section, Peoria, Illinois, Plant.



Caterpillar Diesel No. 12 Motor Grader in action.

EXTENSIVE TRAMRAIL INSTALLATIONS SERVE TWO GIANT CATERPILLAR TRACTOR CO. PLANTS

Peoria Plant Alone Has $1,000,000 Installation

SINCE the first small initial order for Cleveland Tramrail was placed by Caterpillar Tractor Co. over a quarter of a century ago, their installation has grown steadily until now in the vast Peoria Plant alone there is considerably more than one million dollars' worth in operation.

A large part of the job in building tractors, motor graders, diesel engines, etc., is handling materials. It is calculated that 20 tons of handling is required for each ton of tractors or diesel engines shipped from the plant. Saving a few minutes on each ton handled, amounts to a tremendous overall figure and resultant dollar savings.

Because of changes brought about by rapid plant growth, new models, or adoption of more advanced methods, for which Caterpillar is noted, it is often necessary to dismantle and re-erect Tramrail equipment. The ease with which this can be done with Cleveland Tramrail has proven to be especially advantageous to Caterpillar. Equipment serving one area can be taken down and installed in another area for use on an entirely different handling operation in very little time and usually without interfering with production.

Like Caterpillar, your plant, whether large or small, most likely can profit with Cleveland Tramrail.

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THE CLEVELAND CRANE & ENGINEERING CO.
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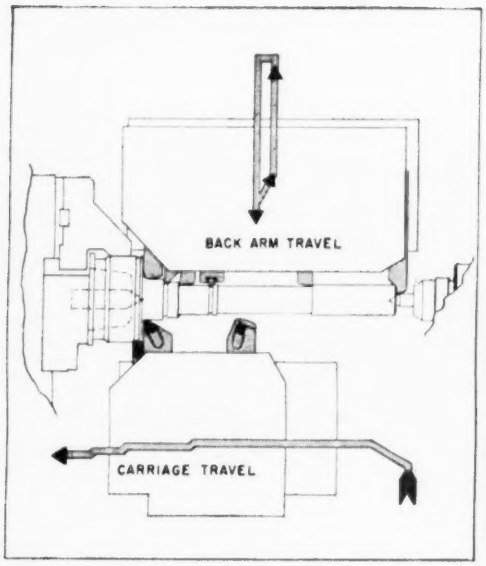
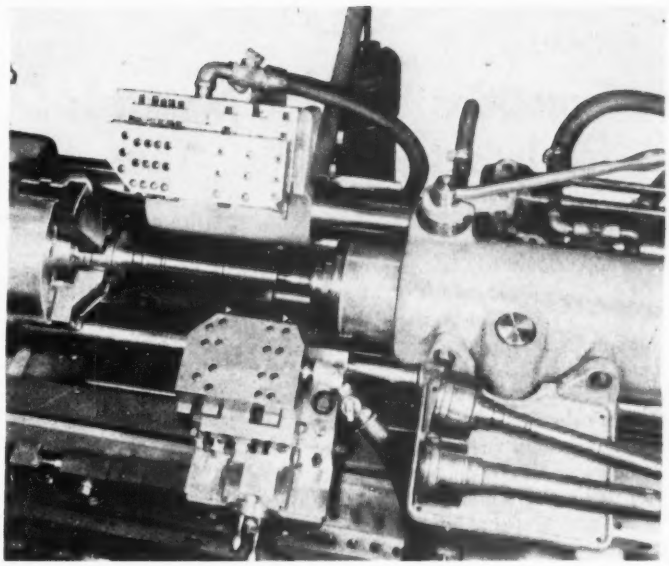
CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT



Three carbide cutters on front carriage turn shaft diameters. Six cutters on back arm face, form and neck shaft. Arrows show direction of carriage and arm travel



Part is held on gear diameter in a three-jaw air chuck and supported on revolving center in tailstock. Sample parts show machining before and after second operation

Cutters Team Up on Workpiece

Doubling up on the cutters gets rid of nonproductive machining time—keeps the chips flying. Cam drums for feed, and form plates for contour keep automatic cycle on right track

GETTING the maximum number of cutters into the act all at once helps automatic machines set production records on all kinds of jobs.

Good example is profile turning on a straight pinion shaft at Warner Gear Div., Borg-Warner Corp., Muncie, Ind. Part is a steel forging about 12½-inches long.

Two Jobs—The tooling setup on a Jones & Lamson Co., Springfield, Vt., Fay automatic lathe includes nine cutters. Three of them are on the front carriage and are used primarily for turning. The rest are on the back arm and serve as forming and facing cutters.

Using carbide-tipped and insert cutters at a surface speed of 959 sfm on the largest diameter, and turning and forming feeds of 0.016 and 0.005-inch per revolution, 80 pieces per hour can come off the machine. At 80 per cent efficiency it comes to 64 parts per hour.

First Turn — Workpiece is held in a three-jaw air chuck on the gear-diameter. This diameter is machined in the first operation. Part is also supported on a revolving center in the tailstock.

First cuts are taken by the two turning cutters on the front carriage. They turn the two long diameters on the shaft simultaneously—feed is toward the chuck. As the center cutter reaches the end of the small diameter, it continues feeding longitudinally but backs out in steps to turn the larger diameters.

Double Draw—As it backs out it clears the other turning cutter. Left cutter touches OD for finish. Profiling motion of the carriage is controlled by a ground template. Large radius near the hub results from a combined withdraw of the carriage and a longitudinal motion of the template.

As the turning stroke nears completion the back arm advances, facing the hub. After both the turning and facing cuts have been completed, the feed is dropped from 0.0165 to 0.005-inch per revolution and the combination of all six cutters on the back arm forms the various necks and radii. Back arm then withdraws to clear the forming cutters. After these cutters are out, the arm moves longitudinally a short distance before completing the withdraw. This avoids putting tool withdraw marks on the faced hub.

PROGRAM

Exposition of Basic Materials for Industry

GRAND CENTRAL PALACE
NEW YORK JUNE 15-19

DEVELOPMENT of new materials and new applications for older materials proceed at a pace no single company can maintain. To augment research departments' efforts, the first Basic Materials Conference & Exposition will point up progress in the approximately 25,000 materials manufacturers can look over when they design a product. A principal conference project will be analysis of how selection can be co-ordinated with other industrial functions. All sessions are at Hotel Roosevelt.

Tuesday, June 16

Economics of Engineering Materials,
T. C. DuMond, *Materials & Methods*, chairman.

Materials and the Future, Eric Hodgins, *Fortune* magazine.

New Materials and What They Mean to Industry, J. J. Harwood, Office of Naval Research, U. S. Navy.

Progress in Materials,
Thomas Piper, Consolidated Vultee Aircraft Corp., chairman.

Panel Session on Materials for High Strength With Low Weight: Low Alloy Steels, A. F. Stuebing, U. S. Steel Corp.

Light Metals, Kirby F. Thornton, Aluminum Co. of America.

Titanium, George T. Fraser, Rem-Cru Titanium Inc.

Reinforced Plastics and Sandwich Construction, N. E. Wahl, Cornell Aeronautical Laboratory Inc.

Molded Plastics, H. M. Quackenbos, Bakelite Co.

Ceramics and Other Nonmetallics, Hans Thurnauer, American Lava Corp.

Wednesday, June 17

Progress in Materials,
Dr. H. H. Lester, Watertown Arsenal, chairman.

Materials for High Temperature Service, H. C. Cross, Battelle Memorial Institute.

Materials for Low Temperature Service, Francis B. Foley, International Nickel Co. Inc.

Atomic Energy,
J. R. Townsend, Sandia Corp., chairman.

Materials and the Atomic Age, Dr. R. Carson Dalzell, U. S. Atomic Energy Commission.

Progress in Materials,
Alex Javitz, *Electrical Manufacturing*, chairman.

Insulating Materials, Dr. A. J. Warner, Federal Telecommunication Laboratories Inc.

Magnetic Materials, Dr. Eberhard Both, Signal Corps., U. S. Army.

Lubricating Materials, speaker to be announced.

Thursday, June 18

Materials Specifications and Management,
J. B. Seastone, Westinghouse Electric Corp., chairman.

How to Select and Specify Materials, J. W. Frazier, Hughes Aircraft Co.

How Simplification and Standardization Can Reduce Materials Costs, Joseph Gurski, Ford Motor Co.

Materials Utilization,
W. A. Stadtler, International Business Machines Corp., chairman.

Panel Session on Co-ordination Among Materials, Production, Design and Sales, Theodore Jagen, Hyatt Bearings Division, General Motors Corp. and R. C. Gibbons, Bendix Aviation Corp.

EXHIBITORS

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American Lava Corp.	71
American Light Alloys Inc.	74
American Silver Co.	73
Ampco Metal Inc.	301, 302, 303
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Brown Co.	53
Carborundum Co.	20
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Corning Glass Works	55-C
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Mycalex Corp. of America	312
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Owens-Corning Fiberglas Corp.	50
Penton Publishing Co.	15
Plymouth Industrial Products Inc.	24
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Polyplastex United Inc.	19
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Reinhold Publishing Corp.	55-B
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Richardson Co.	275
Rigidized Metals Corp.	225
Rodney Metals Inc.	224
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Star Porcelain Co.	328
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Stupakoff Ceramic & Mfg. Co.	37
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Taylor Fibre Co.	26
Time Magazine	2
United States Testing Company Inc.	4
Western Felt Works	72
Wisconsin Centrifugal Foundry	22

MILLION DOLLAR BABY at a bargain price

MANIPULATOR
The years of research which perfected this heavy-duty machine resulted in a new invention.

MANIPULET
Outgrowth of the Manipulator, this new device handles smaller pieces in less space and requires lower capital investment.

Salem-Brosius is proud to announce MANIPULET, an ingenious new device for furnace charging and drawing, transporting, and hammer or press manipulating of blanks and billets up to 1,500 pounds. This machine is literally the by-product of the many years of research which perfected its larger relative, yet is scaled down in cost to fit smaller and less arduous forging operations. It is truly a "million-dollar baby at a bargain price." Like the big Brosius Auto-Floor Forging Manipulator, its movements under hammer or press are extremely sensitive. It raises and lowers a forging piece, tilts it up or down, and rotates it . . . in fact, the Manipulet does everything possible with chain hoist and porter bar with far greater speed, safety and precision. Because of its unique ability to move into position, grasp and carry, while the operator remains at a safe distance, its use has already been suggested for handling other relatively heavy objects such as gas cylinders and boxes of radio-active material. If the Manipulet seems to fit your materials-handling problem—either forging or otherwise—please write to us for further information.

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The Market Outlook

FURTHER price increases on steel products are anticipated by consumers. While the recent flurry of advances resulting from upward adjustments in extra cards is about over, revisions in base prices are believed in the making. These, it is expected, will follow promptly upon any wage boost stemming from current negotiations between leading steelmakers and the union. Showdown on the wage question comes within the next three weeks, but the outcome of negotiations may not be known until end of June.

AS WAGES GO— Extent that base prices will rise depends on the amount wages are increased. At the moment all the signs point to a wage settlement without a strike though there can be no certainty of this until agreements actually are reached. The steelworkers have not specified the amount of wage increase they seek, but trade gossip has it they will be satisfied if they get around 10 cents an hour. Almost to a man steel executives oppose a wage hike at this time, but their position on the question has been weakened by recent revisions in automotive wage agreements.

PRICES TO RISE— In event steel wages are upped 10 cents an hour, market observers are of the opinion base prices will rise $4 to $5 per ton. Such an increase added to those resulting from recent changes in extras will likely force steel consumers to adjust upward their prices on finished goods. The exact amount of the steel increase arising from the revision in extras cannot be determined, but some idea of the effect of these changes on steel costs is shown by the rise in the Bureau of Labor Statistics' finished steel price index which now stands at 136.6 compared with 130 in April.

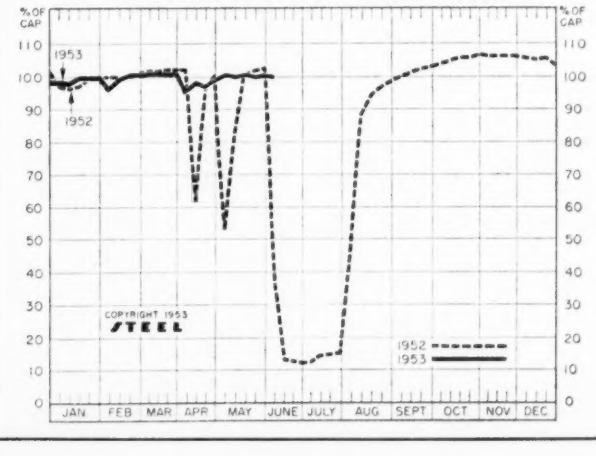
STABILITY SOUGHT— Once the current wage and price questions are out of the way the steelmakers are expected to move toward achieving a stable market in the various products. Generally, they are inclined toward a firm and realistic position on future pricing, with production costs and competitive factors in mind at all times. One leading producer publicly committed itself to a single price policy for all consumers, its prices to be based realistically on costs and to be publicly listed.

DEMAND UNDIMINISHED— Consumers continue to press for every pound of steel they can get. Producers' order books are filled through third quarter on all the major products and, barring unforeseen cancellations, there is little prospect any substantial open tonnage will be available over the summer. Some signs of easing supply conditions should begin to show up in third quarter, however.

SHEETS TIGHT— At the moment, sheets and strip, except for galvanized, appear to be under greatest consuming pressure. Demand for hot and cold-rolled sheets, enameling stock and electrical grades, was never stronger and no letup is in sight. Pressure is greatest on automotive account. Any letdown in auto requirements would quickly change supply conditions in this area of the market, but such slowing down is not yet in sight with the automakers still seeking conversion and foreign tonnages.

PRODUCTION— With steelmaking operations booming along at capacity pace raw material supply is comfortable, assuring support for high-level production through the year. Iron ore is flowing down the Great Lakes in record volume and scrap supplies are more than adequate for current demand, in fact, are a drug on the market with prices soft. Last week the steel mills operated at 100 per cent of capacity, off ½ point from the preceding week.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended June 6	Change	Same Week 1952	Same Week 1951
Pittsburgh	98.5	+ 3*	23.5	100
Chicago	105	0*	37	106
Mid-Atlantic	98	+ 0.5	46	101
Youngstown	105	0	28	105
Wheeling	100.5	— 1.5	61.5	98.5
Cleveland	103.5	— 2*	25	100
Buffalo	106.5	0	12	104
Birmingham	101	— 2	28	100
New England	90	+ 5	69.5	89
Cincinnati	99	— 1	55	102
St. Louis	100	+ 11.5	45	99.5
Detroit	107	— 2.5	51	103
Western	109	— 2	37.5	105.5
Estimated National Rate	100	— 0.5	..	103

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	June 2 1953	May 26 1953	Month Ago	May Average
(1947-1949=100)	136.6	136.6*	132.2	133.7

* Revised.

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended June 2, 1953

Units are 100 lb except where otherwise noted. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$4.075	Sheets, C.R. carbon	$5.625
Track spikes	6.725	Sheets, galv.	6.765
Track bolts	10.175	Strip, C.R., carbon	5.100
Tie plates	4.925	Strip, C.R. stainless (lb)	0.333
Joint bars	5.075	Pipe, black, buttweld (100 ft)	7.500
Plates, carbon	4.288	Pipe, galv., buttweld (100 ft)	9.166
Structural shapes	4.400	Boiler tubes (100 ft)	36.168
Bars, tool steel (lb)	1.580	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	7.025	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.392
Bars, carbon	4.400	Wire, fence, galv.	7.017
Bars, reinforcing	4.250	Nails (100 lb kegs)	7.416
Bars, C.F. carbon	6.275	Wire, barbed (80 rod spool)	6.160
Sheets, H.R., carbon	4.375	Woven wire fence (20 rod roll)	13.629

FINISHED PRICE INDEX, Weighted:

Calculated by STEEL*	June 4 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	182.82	182.82	181.31	171.92	135.02
Index in cents per lb.	4.953	4.953	4.912	4.657	3.658

ARITHMETICAL PRICE COMPOSITES:

Calculated by STEEL*					
Finished Steel NT	$111.28	$111.28	$110.98	$106.32	$80.27
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.54	40.59
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	40.12
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	41.12
Steelmaking Scrap, GT	39.50	39.17	39.67	43.00	40.67

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	June 4 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.875
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.875
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.252	3.356
Bars, C.F. Pittsburgh	4.925	4.925	4.925	4.55	3.50
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.775
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.775
Shapes, del., Philadelphia	4.13	4.13	4.13	3.93	2.98
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.925
Plates, Chicago	3.90	3.90	3.90	3.70	2.925
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60–75	2.775
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.775
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.50
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.50
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.76
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H. R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.06
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.775
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.85-5.85	3.775
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.60
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.735
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.85-5.10	3.725
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.90-6.20	5.125
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.65
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$54.00
Wire rods, ¼-⅝", Pitts.	4.425	4.425	4.425	4.10–30	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.75	42.17
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.25	42.67
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	39.38
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	45.09
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	58.00
Ferromanganese, Etna, Pa.	200.00†	200.00†	196.07†	158.00‡	151.00*

*F.o.b. cars, Pittsburgh; 78-82% Mn, per gross ton. †74-76% Mn, per net ton. ‡78-82% Mn, per gross ton.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$39.50	$39.50	$39.50	$44.00	$40.25
No. 1 Heavy Melt, E. Pa.	41.50	41.50	42.00	42.50	42.50
No. 1 Heavy Melt, Chicago	37.50	36.50	37.50	42.50	39.25
No. 1 Heavy Melt, Valley	41.50	41.50	41.50	44.00	40.25
No. 1 Heavy Melt, Cleve.	39.00	39.00	39.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	40.75	40.75	41.75	43.00	44.00
Rails, Rerolling, Chicago	47.50	47.50	49.00	52.50	52.50
No. 1 Cast, Chicago	38.00	39.00	41.50	49.00†	69.00

†F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl.	$14.75	$14.75	$14.75	$14.75	$13.00
Beehive, Fdry, Connisvl.	17.00	17.00	17.00	17.50	15.125
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	19.50

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 186-187.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity,Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward,Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda,N.Y. W12	54.50	55.00	55.50	....
No.Tonawanda,N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester,N.Y., del.	57.52	58.02	58.52	....
Syracuse,N.Y., del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary,Ind. U5	54.50	....	55.00	....
IndianaHarbor,Ind. I-2	54.50	....	55.00	....
So.Chicago,Ill. W14	54.50	55.00	55.00	....
So.Chicago,Ill. Y1	54.50	55.00	55.00	....
So.Chicago,Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon,Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron,O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain,O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie,Pa. I-3	54.50	55.00	55.00	55.50
Everett,Mass. E1	....	59.50	60.00	....
Fontana,Calif. K1	60.50	61.00	....	....
GraniteCity,Ill. G4	56.40	56.90	57.40	....
St.Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton,Utah C11	54.50	55.00	....	....
Geneva,Utah C11	54.50	55.00	....	....
LoneStar,Tex. L6	50.50	*51.00	51.00	....
Minnequa,Colo. C10	56.50	57.50	57.50	....
Rockwood,Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	55.00	55.00	55.50
Pitts.,N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer,Pa. U5	54.50	....	55.00	55.50
Clairton,Rankin,So.Duquesne,Pa. U5	54.50	....	....	....
McKeesport,Pa. N3	54.50	....	....	55.50
Monessen,Pa. P7	56.50	....	....	....
Sharpsville,Pa. S6	....	....	55.00	55.50
Steelton,Pa. B2	56.50	57.00	57.50	58.00
Swedeland,Pa. A3	58.50	59.00	59.50	60.00
Toledo,O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy,N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard,O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield,O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton
(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	92.50
Keokuk,OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee,Wash., OH & Fdry., freight allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton,Pa. B2	62.50
Philadelphia, delivered	66.05
Troy,N.Y. R2	62.50

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NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 29.75-30.00c, Conn. Valley; Lake nom.; foreign electrolytic, del. 29.75-30.00c.

Brass Ingots: 85-5-5-5 (No. 115) 38.00c; 88-10-2 (No. 215) 34.75c; 80-10-10 (No. 305) 30.00c; No. 1 yellow (No. 405) 21.25c.

Zinc: Prime western 11.00c; brass special 11.25c, intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

Lead: Common 13.05c; chemical 13.15c; corroding 13.15c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 22.50-23.00; No. 12 foundry alloy (No. 2 grade) 22.25-22.75; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.25-24.00; grade 2, 22.25-23.00; grade 3, 21.50-22.25; grade 4, 20.50-21.25.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt RFC, 121.50c; outside market 96.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $195-$198, per 76-lb flask.

Cadmium: "Regular" straight or flat forms, $2 deld.; special or patented shapes $2.15.

Beryllium-Copper: 3.75-4.25% Be, $40.00 per lb of contained beryllium, with balance as copper at market price on date of shipment, f.o.b. Reading, Pa., or Elmore, O.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $165-$175 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

Sheet: Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18% 59.84; phosphor-bronze grade A, 5% 70.50.

Rod: Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85% 46.80; 80% 45.68.

Seamless Tubing: Copper 50.42; yellow brass 45.78; commercial bronze, 90% 51.32; red brass, 85% 49.92.

Wire: Yellow brass 43.16; commercial bronze, 95% 50.18; 90% 49.05; red brass, 85% 47.40; 80% 46.28; best quality brass, 44.72.

(Base prices, effective Apr. 1, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.58; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.85; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire del., 15,000 lb or more 43.93; l.c.l., 44.68.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.188	48.9	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets: Full rolls, 140 sq ft or more $18.25 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $18.25 per cwt. Traps and bends: List prices plus 30%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-65.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
June 3-4	29.75-30.00	13.05	11.00	96.50	20.50	34.50	60.00	85.25
June 1-2	29.75-30.00	13.05	11.00	95.00	20.50	34.50	60.00	85.25
May 29	29.75-30.00	13.05	11.00	95.50	20.50	34.50	60.00	85.25
May 26-28	29.75-30.00	13.05	11.00	96.00	20.50	34.50	60.00	85.25
May 25	29.75-30.00	12.80	11.00	97.25	20.50	34.50	60.00	85.25
May 22-23	29.75-30.00	12.80	11.00	95.75	20.50	34.50	60.00	85.25
May 21	29.75-30.00	12.80	11.00	97.50	20.50	34.50	60.00	85.25
May 20	29.75-30.00	12.80	11.00	98.50	20.50	34.50	60.00	85.25
May 19	29.75-30.00	12.80	11.00	100.00	20.50	34.50	60.00	85.25
May 18	29.75-30.00	12.55	11.00	99.50	20.50	34.50	60.00	85.25
May 15-16	29.75-30.00	12.30	11.00	98.50	20.50	34.50	60.00	85.25
May 14	29.75-30.00	12.30	11.00	98.00	20.50	34.50	60.00	85.25
May 13	29.75-30.00	12.30	11.00	97.00	20.50	34.50	60.00	85.25
May 11-12	29.75-30.00	12.30	11.00	96.50	20.50	34.50	60.00	85.25
May 8-9	29.75-30.00	12.30	11.00	99.00	20.50	34.50	60.00	85.25
May Avg.	29.845	12.55	11.00	97.240	20.50	34.50	60.00	85.25
Apr. Avg.	30.755	12.473	11.00	102.567	20.50	34.50	60.00	85.25

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled, oval, carbonized, carloads 81.00c; 5000 to 29,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 499 lb, 89.00c, f.o.b. Cleveland.

Nickel Chloride: In 100 lb bags; 10,000 lb and over, 37.00c; 5000 to 9900 lb, 38.00c; 400 to 4900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers $1.10 per lb; 100 or 350 lb drums only, 100 to 600 lb 71.80c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on $1.215 tin.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more. Based on $1.215 tin.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time, of any or all kinds of scrap, add 1 cent per pound.)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	28.625	28.625	27.875
Yellow Brass	21.375	21.125	19.625
Commercial Bronze			
95%	27.250	27.000	26.500
90%	26.125	25.875	25.375
Red Brass			
85%	25.125	24.875	24.375
80%	24.125	23.875	23.375
Best Quality(71-80%)	22.500	22.250	21.750
Muntz metal	20.000	19.750	19.250
Nickel silver, 10%	25.250	25.000	12.625
Phos. Bronze, A	30.625	30.375	29.375
Naval Brass	20.000	19.750	19.250
Manganese Bronze	20.000	19.750	19.250

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 24.50-25.00; No. 2 copper 23.00-23.50; light copper 21.50-22.00; refinery brass (60% copper) per dry copper content 20.00.

INGOT MAKERS' COPPER AND BRASS SCRAP BUYING PRICES

(Cents per pound, carlots, delivered)

No. 1 copper 24.50; No. 2 copper, 23.00; light copper 21.50; No. 1 composition borings 17.50-18.00; No. 1 composition solids, 18.00-18.50; radiators, 14.00, nom.; heavy yellow brass solids, 14.00-14.50; yellow brass turnings 13.50.

SMELTERS' BUYING PRICES FOR SCRAP ALUMINUM

(Carlots, delivered)

2S aluminum clippings, 16.50-17.50c; mixed clippings, 16.00-17.00; old aluminum sheet, 13.00-14.00c; old aluminum cast, 13.00-14.00c; borings and turnings, 13.50-14.50c.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 23.00-23.50; No. 2 20.50-21.00; light copper 18.50-19.00; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 10.00; new brass clippings 17.50; No. 1 brass rod turnings 16.00; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 16.50; auto radiators, unsweated 13.00; cocks and faucets 15.00; brass pipe 16.00.

Aluminum: Clippings 2S 13.00; old sheets 9.00; crankcase 9.00; borings and turnings 6.50; pistons and struts 6.50.

Tin: No. 1 pewter 55.00; block tin pipe 80.00; No. 1 babbitt 45.00.

Lead: Heavy 10.25-10.75; battery plates 5.75-6.00; linotype and stereotype 12.50-13.25; electrotype 10.75-11.50; mixed babbitt 11.50-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Nickel: Sheets and clips $1.00; rolled anodes $1.00; turnings 85.00; rod ends $1.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

The Metal Market

Frantic pace of nonferrous buying slows down as the summer doldrums begin to set in. There's a possibility that military requirements will not take all setaside metal

EMERGENCE of summer finds industrial buyers evidencing more interest in planning vacations than setting up metal buying programs.

As a result, scattered lulls have developed in some sectors of the market. Purchasers have time for a few deep breaths and to contemplate a more languid season to come.

Change of Pace—There won't be a general hiatus though. Business is good and production in nearly all segments of metalworking is strong. But lining up materials for production will not have to proceed at the frantic tempo of the past two years. It's getting to be easier to buy nearly all metals, too. The range of easy availabilities is broader than most people would have dared hope for only a year ago.

There's a possibility civilian producers will get more metal from portions reserved for the military. In a number of products, rated orders for DMS materials aren't running as high as required setasides. This excess would be available to further ease buyers' purchase problems. Another factor is that many nonferrous metal fabricators and processors take en masse vacations during the hot spell. Inventories are being watched closer. There's little need for protective buying at the present time.

The Roundup — Among buyers, opinion holds that copper will pose no problems supplywise and is likely to weaken in price over the summer. Trading in copper futures on the commodity exchange resumed last week after a two year lapse. More people watched the exchange for price clues than participated in trading.

One reason is that many copper users are in the habit of buying only a month ahead, and don't want to stick their necks out with the outlook so uncertain. July copper sold at 28.75 cents, but quotations for year end were higher than a lot of traders expected. Custom smelters again revised buying prices for scrap, cutting a half-cent and slowing the flow considerably.

Zinc Steady—There's still too much zinc around. Consumption remains excellent, but swollen imports make a lot of difference. Prime western sales are a bit stronger. Diecasters using special high grade zinc continue their bee-hive activity.

Surprisingly, zinc hasn't changed prices for three months now. Domestic sellers figure any lower prices they post would be followed automatically by lower import quotations, leaving them even worse off than before. Price differential is about two cents, but freight costs help equalize cost to inland customers.

STEEL'S Metal Price Averages for May, 1953

(Cents per pound)

Electrolytic Copper, del. Conn.	29.845
Lead, St. Louis	12.550
Prime Western, Zinc, E. St. Louis	11.000
Straits Tin, New York	97.240
Primary Aluminum Ingots, del.	20.500
Antimony, f.o.b. Laredo, Tex.	34.500
Nickel, f.o.b. refinery	60.000
Silver, New York	85.250

Lead Perks Up—Significant factor in the lead market, which is holding up better than expected, is the well-diversified demand. Secondary tone is strong too, particularly because of batterymakers' activity. Price is firm and only a shade higher than import metal.

St. Joe has one furnace down at its Herculaneum smelter, which will pinch off about 5000 tons monthly. Another furnace is expected to be down until October or November. Smelting charge on battery plates is edging toward the low side of its $35-40 range, indicating more secondary lead is needed.

Around the Market—Aluminum men find demand exceptionally strong. With primary output moving at a record clip, the next three months could prove a good test of the light metal's real popularity with industry. April primary turnout totalled 102,076 tons, 33 per cent over April, 1952. Tin continues its fluctuations in the $0.90-$1.00 range. Currently it's showing minor moves daily, depending on London and Singapore markets. Mercury market has been quiet and steady for over a month now and may be stirring shortly.

Nickel Contract for DMPA

International Nickel Co. of Canada has contracted with Defense Materials Procurement Agency to supply 60,000 tons of the defense-vital metal over a 5-year period; deliveries to start this December. Favorable developments in nickel point up possibility of dramatic easing before the year is out. While DMPA says its latest purchase deal brings its expansion assistant program close to completion, the government is known to be considering other purchase contracts, and further expansion of the Nicaro, Cuba, plant by up to 100 per cent of its present 27 million pound capacity.

The INCO metal will come from Copper Cliff, Ontario, priced at present market price plus allowance for amortization and extra production costs. Also in the contract is purchase of 50,000 tons of copper, priced at 27 cents, Canadian money, f.o.b., Copper Cliff. DMPA now has purchase agreements amounting to 260,000 tons of nickel over the next ten years.

Open for Suggestions

What applications can you suggest for magnesium plate 3/16 to 1 inch thick? Brooks & Perkins Inc., Detroit, wants to know. In a letter accompanying its quarterly magazine of magnesium, B&P explains that its commercial hot-rolled alloy plate is available at a low price with reasonable delivery. It's uncovered a few new applications but wants industry's help in suggesting other possible uses.

Veteran Copper Mine Reopens

Further domestic copper mining expansion will be undertaken by Kennecott Copper Corp. It's planning to develop a new open-pit mine in Nevada, near the company's present operations. Known as the "Veteran," the ore body was once mined by underground methods, but hasn't been in operation since 1914. Low-grade copper ore averages less than one per cent copper.

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Columbus, O. Chicago St. Louis New York

Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on pages 130-131.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....75.00

INGOTS Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....65.00
Midland,Pa. C18 .....57.00
Munhall,Pa. U5 .....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 .....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ..59.00

Carbon, Forging (NT)
Bessemer,Pa. U5 .....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 .....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3, S24 .....89.50
So.Chicago R2,U5,W14.70.50
So.Duquesne,Pa U5 ...70.50
So.SanFrancisco B3 ..89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.50
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 .....76.00
Lackawanna,N.Y. B2..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....76.00
Seattle S24 .....96.00
So.Chicago R2,U5,W14.76.00
So.Duquesne,Pa. U5 ..76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R3 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ..87.50

SHEET BARS (NT)
Fontana,Calif. K1 ...$93.18

SKELP
Aliquippa,Pa. J5 .....3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ...3.55

WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ...4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 ....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ...4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ...4.625

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.50
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity, Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ...4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14.3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 ....4.10

Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....5.05
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

Alloy Stand. Shapes
Clairton,Pa U5 .....4.725
Fontana,Calif. K1 ....6.125
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 ....6.45
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill U5 .....5.80
So.SanFrancisco B3 ..6.30
Struthers,O. Y1 .....6.30

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75

BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.65
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2..5.25

FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ..4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 ....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..4.15
Cleveland,c.l. R2 .....4.50
Warren,O.,c.l. R2 ....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10 ..3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 ....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1..4.55
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 ....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.70
Geneva, Utah C11 .....5.05

PLATES, Wrought Iron
(Add 4.7% to base, extras)
Economy,Pa. B14 ....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill L1 .....4.50
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Portland,Oreg. O4 .....4.70
Seattle B3, N14, S24 ..4.70
So.ChicagoR2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ...3.95
So.SanFran.,Calif. B3...4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5 ....3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.25
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00

BAR SIZE ANGLES;H.R.CARBON
Bethlehem,Pa. B2 .....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2.....4.675
Buffalo R2 .....4.675
Canton,O. T7 .....4.72
Canton,O. R2 .....4.675
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 ....7.175
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 ....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.675
So.Chicago R2,U5,W14.4.675
So.Duquesne,Pa. U5 ..4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 ....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 ....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ...5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 ....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ..5.925
So.SanFrancisco B3 ...6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ..4.925
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Detroit B5 .....5.125
Donora,Pa. A7 .....4.925
Elyria,O W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. P7 ....4.925
Hammond,Ind I.2,M13.4.925
Hartford,Conn. R2 .....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 ...5.475
Massillon,O. R2, R8 ..4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 ....5.375
Plymouth,Mich. P5 ...5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ...5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ...6.00
Bethlehem,Pa. B12 ....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago. B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Detroit B5 .....6.20
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond Ind. L2,M13.6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N.Y. B2 ...6.00
Mansfield,Mass B5 ....6.45
Massillon,O. R2,R8 ....6.00
Midland,Pa. C18 .....6.00
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.95
Atlanta A11 .....4.25
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ..4.85
Seattle B3, N14, S24 ..4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa U5 .....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill. (1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ...3.95

BARS, Reinforcing (Fabricated; to consumers)
Huntington,W.Va. W7 ...5.50
Johnstown, ¼-1" B2 ....5.25
KansasCity S5 .....6.05
LosAngeles B3 .....5.45
Marion,O P11 .....5.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel& Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div, Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

Seattle B3 N:4 .....5.80
Sand Springs S5 .....6.45
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ...5.25
Williamsport,Pa. S19 ...5.35

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ..5.00
Williamsport(3) S19 ...5.25
Williamsport,Pa. S19 ...5.35

BARS, Wrought Iron
(Add 4.4% to base and extras)
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt) L5.14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ..13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8)A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....3.775
Geneva,Utah C11 ....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ..4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ...3.775
SparrowsPoint,Md. B2.3.775
Steubenville,O. W10 ..3.775
Torrance,Calif. C11 ...4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4..3.925
Youngstown U5, Y1 ..3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ..5.575

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 ....7.975
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ..6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 ....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 ....5.675
Fontana,Calif. K1 ....6.775
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ...5.675
Ind.Harbor,Ind. Y1 ...6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ...5.675
Munhall,Pa. U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 ...5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled Steel (Commercial Quality)
Butler,Pa. A10 .....4.575
Cleveland J5, R2 ....4.575
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 ....4.575
Follansbee,W.Va. F4 ..5.575
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.575
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2,Y1.4.575
Irvin,Pa. U5 .....4.575
Lackawanna,N.Y. B2 ..4.575
Middletown,O. A10 ....4.575
Pittsburg,Calif. C11 ..5.525
Pittsburgh J5 .....4.575
SparrowsPoint,Md. B2..4.575
Steubenville,O. W10 ...4.575
Warren,O. R2 .....4.575
Weirton,W.Va. W6 ....4.575
WestLeechburg,Pa. A4..5.45
Youngstown Y1 .....4.575

SHEETS, Galv'd No. 10 Steel
AlabamaCity,Ala. R2 ..5.075
Ashland,Ky.(8) A10 ..5.075
Canton,O. R2 .....5.075
Delphos,O. N16 .....5.675
Dover,O. R1 .....5.775
Fairfield,Ala. T2 .....5.075
Gary,Ind. U5 .....5.075
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2 ....5.075
Irvin,Pa. U5 .....5.075
Kokomo,Ind.(13) C16 ..5.475
Martins Ferry,O. W10 ..5.075
Niles,O. N12 .....6.275
Pittsburg,Calif. C11 ...5.825
SparrowsPoint,Md. B2 .5.075
Steubenville,O. W10 ...5.075
Torrance,Calif. C11 ...5.825
Weirton,W.Va. W6 ....5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy
Irvin,Pa. U5 .....7.625
SparrowsPoint(39) B2..7.775

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.625
Irvin,Pa. U5 .....5.625
Kokomo,Ind.(13) C16 ..6.025
Niles,O. N12 .....6.825

SHEETS ZINCGRIP STEEL No. 10
Butler,Pa. A10 .....5.325
Middletown,O. A10 ....5.325

SHEETS, Electro Galvanized
Cleveland R2 (28) 5.925
Niles,O. R2 (28) 5.925
Weirton,W.Va. W6 ....5.775

SHEETS, Well Casing
Fontana,Calif. K1 .....5.34

BLUED Stock, 29 ga.
Yorkville,O. W10 .....7.00
Follansbee,W.Va. F4 ...7.10
Follansbee (23) F4 ....6.425

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ..4.925
Cleveland R2 .....4.925
Gary,Ind. U5 .....4.925
GraniteCity,Ill. G4 ....5.625
Ind.Harbor,Ind. I-2 ...4.925
Irvin,Pa. U5 .....4.925
Middletown,O. A10 ....4.925
Youngstown Y1 .....4.925

BLACK PLATE (Base Box)
Aliquippa,Pa. J5 .....$6.50
Fairfield,Ala. T2 .....6.60
Gary,Ind. U5 .....6.50
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2, Y1.6.50
Irvin,Pa. U5 .....6.50
Niles,O. R2 .....6.50
Pittsburg,Calif. C11 ....7.25
SparrowsPoint,Md. B2 ..6.60
Warren,O. R2 .....6.50
Weirton,W.Va. W6 ....6.50
Yorkville,O. W10 .....6.50

HOLLOWARE ENAMELING
Black Plate (29 gage)
Follansbee,W.Va. F4 ...6.10
Gary,Ind. U5 .....6.10
GraniteCity,Ill. G4 ....6.30
Ind.Harbor,Ind. Y1 ....6.10
Irvin,Pa. U5 .....6.10
Yorkville,O. W10 .....6.35

SHEETS, Culvert No. 16	Cu	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....	
Canton,O. R2 ..	5.925	6.375	
Fairfield,Ala. T2	5.875	6.125	
Gary,Ind. U5 ...	5.875	6.125	
Ind.Harbor I-2 .	5.875	6.125	
Irvin,Pa. U5 ...	5.875	6.125	
Kokomo,Ind. C16	6.525	....	
MartinsFy.,O.W10	5.875	....	
Pittsburg,Cal.C11	6.625	....	
SparrowsPt. B2.	5.875	....	
Torrance,Cal.C11	6.625	....	

SHEETS, Culvert, No. 16 Pure Iron
Ashland,Ky. A10 .....6.125
Fairfield,Ala. T2 .....6.125
Martins Ferry,O. W10 ..6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier
Ashland,Ky.(8) A10 ..4.025
Cleveland R2 .....4.375
Ind.Harbor,Ind. I-2 ...4.025
Warren,O. R2 .....4.375

SHEETS, Cold-Rolled Ingot Iron
Butler,Pa. A10 .....5.075
Cleveland R2 .....5.175
Middletown,O. A10 ....5.075
Warren,O. R2 .....5.175

SHEETS, Galvanized Ingot Iron No. 10 flat
Ashland,Ky.(8) A10 ...5.325
Canton,O. R2 .....5.825

SHEETS, ZINCGRIP Ingot Iron
Butler,Pa. A10 .....5.575
Middletown,O. A10 ....5.575

SHEETS, ALUMINIZED
Butler,Pa. A10 .....8.425

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ....5.875

MANUFACTURING TERNES (Special Coated)
Fairfield,Ala. T2 .....$7.85
Gary,Ind. U5 .....7.75
Irvin,Pa. U5 .....7.75
Yorkville,O. W10 .....7.75

SHEETS, LT. Coated Ternes, 6 lb
Yorkville,O. W10 ....$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)
Gary,Ind. U5 .....$9.75
Yorkville,O. W10 .....9.75

SHEETS, Long Terne Steel (Commercial Quality)
BeechBottom,W.Va.W10 5.475
Gary,Ind. U5 .....5.475
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....5.475
Niles,O. N12 .....6.275
Weirton,W.Va. W6 ....5.475

ROOFING SHORT TERNES (8 lb Coated)
Gary,Ind. U5 .....9.75

TIN PLATE, American 1.25 lb Coke (Base Box)	1.50 lb	lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1.	8.70	8.95
Irvin,Pa. U5 ...	8.70	8.95
Pitts.,Cal. C11 ..	9.45	9.70
Sp.Pt.,Md. B2 ..	8.80	9.05
Warren,O. R2 ..	8.70	...
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10.	8.70	8.95

STRIP, Hot-Rolled High-Strength Low-Alloy
Bessemer,Ala. T2 .....5.65
Conshohocken,Pa. A3....5.90
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 ....6.75
Gary,Ind. U5 .....5.65
Ind.Harbor,Ind. I-2.....5.65
Ind.Harbor,Ind. Y1 ....6.15
Lackawanna,N.Y. B2 ..5.70
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.65
So.SanFrancisco(25) B3.6.40
SparrowsPoint,Md. B2..5.70
Warren,O. R2 .....5.65
Weirton,W.Va. W6 ....6.10
Youngstown Y1 .....6.15
Youngstown U5 .....5.65

STRIP, Cold-Rolled High-Strength Low-Alloy
Cleveland J5 .....7.45
Cleveland A7 .....7.30
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.15
Lackawanna,N.Y. B2 ..7.90
Sharon,Pa. S3 .....7.30
SparrowsPoint,Md. B2 .7.90
Warren,O. R2 .....7.30
Weirton,W.Va. W6 ....7.95
Youngstown Y1 .....7.80

STRIP, Cold-Rolled Alloy Steel
Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....11.40
Dover,O. G6 .....11.90
Fontana,Calif. K1 .....13.30
Harrison,N.J. C18 .....12.00
Midland,Pa. C18 .....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8.12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ...11.70
Youngstown C8 .....12.00

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ..3.975
Warren,O. R2 .....4.325

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....5.70

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Newport,Ky. N9 (cut lengths)	...	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	..	7.05	7.35	7.85	...
Vandergrift,Pa. U5	...	...	7.85	8.35	9.60	10.40
Warren,O. R2	...	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	...	...	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Newport,Ky. N9 (cut lengths)	10.45	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	...	7.65	8.25	10.30	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2	6.45	7.50	8.10	....	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base.	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2..	6.30	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 (29)	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	10.30	12.50	15.35

* Plus $1.575 per 100 lb.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.-HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.

U4 Universal Cyclops Steel
U5 United States Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(27) R2....3.725
Alton,Ill. L1 .....4.20
Ashland,Ky.(8)A10 ..3.725
Atlanta A11 .....4.275
Bessemer,Ala. T2 ....3.725
Bridgeport,Con.(10)S15 4.225
Buffalo(27) R2 .....3.725
Butler,Pa. A10 .....3.725
Carnegie,Pa. S18 ....4.225
Conshohocken,Pa. A3 ..4.125
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.025
Fairfield,Ala. T2 ....3.725
Fontana,Calif. K1 ....5.175
Gary,Ind. U5 .....3.725
Houston,Tex. S5 .....4.125
Ind.Harbor,Ind. I-2,Y1.3.725
Johnstown,Pa.(25) B2..3.725
KansasCity,Mo.(9) S5..4.325
Lackaw'na,N.Y.(32) B2 3.725
LosAngeles(25) B3 ....4.475
Milton,Pa. B6 .....4.35
Minnequa,Colo. C10 ...4.775
NewBritian(10) S15 ...4.225
N.Tonawanda,N.Y.B11 3.725
Pittsburg,Calif. C11 ...4.475
Riverdale,Ill. A1 .....3.725
SanFrancisco S7 .....5.00
Seattle(25) B3 .....4.725
Seattle N14 .....4.725
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ...3.725
So.SanFrancisco(25) B3 4.475
SparrowsPoint,Md. B2 ..3.725
Sterling,Ill. N15 .....4.725
Torrance,Calif. C11 ...4.475
Warren,O. R2 .....3.725
Weirton,W.Va. W6 ....3.825
WestLeechburgh,Pa. A4 3.975
Youngstown U5, Y1 ...3.725

STRIP, Hot-Rolled Alloy
Bridgeprt,Conn.(10)S15. 6.05
Carnegie,Pa. S18 ....6.45
Fontana,Calif. K1 ....7.50
Gary,Ind. U5 .....6.10
Houston,Tex. S5 .....6.50
KansasCity, Mo. S5 ....6.70
Midland,Pa. C18 .....5.85
NewBritn.,Conn.(10)S15 6.05
Sharon,Pa. S3 .....6.45
Youngstown U5 .....6.10

STRIP, Cold-Rolled Carbon
Anderson,Ind.(40) G6 ..5.50
Bridgeprt,Conn.(10)S15. 5.80
Butler,Pa. A10 .....5.10
Cleveland A7, J5 .....5.10
Dearborn,Mich. D3 ....6.05
Detroit D2 .....5.60
Detroit M1 .....5.45
Dover,O.(40) G6 .....5.50
Ecorse,Mich. G5 .....5.30
Follansbee,W.Va. F4 ..5.10
Fontana,Calif. K1 ....7.00
FranklinPark,Ill.(40)T6 .5.35
Ind.Harbor,Ind. I-2 ....5.35
Lackawanna,N.Y. B2 ..5.10
LosAngeles C1 .....7.15
Mattapan,Mass. T6 ....5.95
Middletown,O. A10 ....5.10
NewBritain(10) S15 ....5.80
NewCastle,Pa. B4 .....5.80
NewCastle,Pa.(40) E5 ..5.70
New Haven,Conn. D2 ...5.85
NewHaven,Conn. A7 ...5.60
Pawtucket,R.I. R3 ....6.45
Pawtucket,R.I.(21) N8..6.30
Riverdale,Ill.(40) A1 ...5.35
Rome,N.Y. R6 .....5.10
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 .5.10
Trenton,N.J. R5 .....6.45
Wallingford,Conn. W2 ..630
Warren,O.(40) T5 .....5.70
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown C8 (40) ...5.70
Youngstown Y1 .....5.10

STRIP, Electro Galvanized
Dover,O. G6 .....5.50
Warren,O. T5 .....5.70
Weirton,W.Va. W6 ....5.10
Youngstown C8 .....5.70

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.45
Riverdale,Ill. A1 .....4.30
Sharon,Pa. S3 .....4.55
Youngstown U5 .....4.15

ROPE WIRE
Alton,Ill. L1 (43) 8.75
Bartonville,Ill. K4 .....8.95
Buffalo W12 (43) 8.55
Fostoria,O. S1 (43) 8.85
Johnstown,Pa. B2 (43)..8.55
Monessen,Pa. P16 (43)..8.55
Monessen,Pa. P7 (43) ..8.80
Muncie,Ind. I-7 (43) ...8.75
Palmer,Mass. W12 (43)..8.85
Portsmouth,O. P12 (43).8.85
Roebling,N.J. R5 (43) ..8.85
SparrowsPt, B2 (43) ..8.65
Struthers,O. Y1 (43) ...8.55
Worcester J4, T6 (43) ..8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	6.075	6.325
Aliquippa J5	6.075	6.525‡
Atlanta A11	6.325	6.675
Bartonville(19)K4	6.075	6.40
Buffalo W12	5.225	....
Cleveland A7	6.075	6.225
CrawfordsvilleM8	6.175	6.475
Donora,Pa. A7	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield T2	6.075	6.225
Houston,Tex S5	6.475	6.80
Johnstown B2	6.075	6.45†
Joliet,Ill. A7	6.075	6.225
KansasCy.,Mo. S5	6.675	7.00
Kokomo C16	6.175	6.425
LosAngeles B3	7.025	....
Minnequa C10	6.325	6.70*
Monessen P7	6.075	6.45
Palmer W12	5.525	....
Pitts.,Calif. C11	7.025	7.175
Prtsmth.(18)P12	6.475	....
Rankin A7	6.075	6.225
So.Chicago R2	6.075	6.325
So.S.Fran. C10	7.025	7.40*
SparrowsPt, B2	6.175	6.55†
Sterl'g(1)(48)N15	6.375	6.925
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7	6.375	6.525

*Based on 14c zinc; †14.50c zinc; ‡17.5c zinc.

WIRE (16 gage) Stone Stone (Add 4.7% on base and extras)

	An'ld.	Galv.
Aliquippa J5	10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	10.25	11.55
Crawfrdsville	M8.10.73	12.51
Fostoria,O. S1	10.40	13.00
Johnstown B2	10.73	12.58‡
Kokomo C16	10.625†	12.325‡
Minnequa C10	10.40	12.425*
Palmer,Mass. W12	10.25	12.15
Pitts.,Cal. C11	10.60	11.90
SparrowsPt, B2	10.84	12.68‡
Sterling(1) N15	10.73†	12.15†
Waukegan A7	10.25	11.55
Worcester A7	11.85	....

*Based on 14c zinc; ‡14.50c zinc. †Includes 4.7% increase.

WIRE, Manufacturers Bright, Low Carbon
AlabamaCity,Ala. R2..5.225
Aliquippa,Pa. J5 (42)...4.85
Atlanta A11 .....5.475
Alton,Ill. L1 .....5.45
Bartonville,Ill. K4 .....5.325
Buffalo W12 .....5.225
Chicago W13 .....5.475
Cleveland A7, C20 .....5.225
Crawfordsville,Ind. M8.5.325
Donora,Pa. A7 .....5.225
Duluth,Minn. A7 .....5.225
Fairfield,Ala. T2 .....5.225
Fostoria,O. (24) S1 ....5.725
Houston S5 .....5.625
Johnstown,Pa. B2 .....5.225
Joliet,Ill. A7 .....5.225
KansasCity,Mo. S5 ....5.825
Kokomo,Ind C16 .....5.325
LosAngeles B3 .....6.175
Minnequa,Colo. C10 ....5.475
Monessen,Pa. P7 .....5.475
Newark 6-8 ga I-1 ....5.88
No.Tonawanda B11 ....5.225
Palmer,Mass. W12 .....5.525
Pittsburg,Calif. C11 ...6.175
Portsmouth,O. P12 .....5.625
Rankin,Pa. A7 .....5.225
So.Chicago,Ill. R2 .....5.225
So.SanFrancisco C10 ..6.175
SparrowsPoint,Md. B2..5.325
Sterling,Ill.(1) N15 ....5.225
Struthers,O. Y1 .....5.225
Torrance,Calif. C11 ...6.175
Waukegan,Ill. A7 .....5.225
Worcester,Mass. A7 ....5.525

WIRE, Cold-Rolled Flat
Anderson,Ind. G6 .....6.20
Buffalo W12 (43) 6.35
Cleveland A7 .....6.95
Crawf'sville,Ind.M8(63). 5.70
Dover,O. G6 .....6.20
Fostoria,O. S1 (43) 6.00
Kokomo,Ind. C16 (43)..5.70
FranklinPark,Ill. T6(43) 6.20
Massillon,O. R8 (43) 5.85
Monessen,Pa. P16 (43)..6.35
Monessen,Pa. P7 (43) ..6.10
Pawtkt.R.I.(12) N8 (43)6.85
Trenton,N.J. R5 (43) ...6.15
Worcester,Mass. A7 .....7.25
Worcester,Mass. T6 (43).6.50
Worcester,Mass.W12(43) 6.65

WIRE, Galv'd ACSR for Cores
Bartonville,Ill. K4 .....8.90
Monessen,Pa. P16 (43)..8.50
Muncie,Ind. I-7 (43) ...8.70
Roebling,N.J. R5 (43) ..8.80
SparrowsPt., Md. B2(43).8.60
Johnstown,Pa. B2 (43)..8.50

WIRE, MB Spring, High Carbon
Aliquippa,Pa. J5 (43) ..6.25
Alton,Ill. L1 (43) 6.55
Bartonville,Ill. K4 .....6.64
Buffalo W12 (43) 6.25
Cleveland A7 .....6.55
Donora,Pa. A7 .....6.55
Duluth,Minn. A7 .....6.55
Fostoria,O. S1 (43) 6.25
Johnstown,Pa. B2 (43)..6.25
Millbury(12) N6 (43)...8.05
Minnequa,Colo. C10(43).6.50
Monessen,Pa. P7 (43) ..6.25
Monessen,Pa P16 .....6.75
Muncie,Ind. I-7 (43) ...6.45
Palmer,Mass W12 (43) 6.55
Pittsburg,Calif. C11 ....7.50
Roebling,N.J. R5 (43)..6.55
Portsmouth,O. P12(43)..6.25
So.Chicago,Ill. R2 (42)..6.25
So.SanFran. C10 (43) 7.20
SparrowsPt.,Md. B2 (43)6.35
Struthers,O Y1 (43) ...6.25
Trenton,N.J. A7 .....6.85
Waukegan,Ill. A7 .....6.55
Worcester A7 .....6.85
Worcester, T6, W12 (43).6.55
Worcester,Mass. J4 (43).6.75

Wire Upholstery Spring
Aliquippa,Pa. J5 .....6.275
Alton,Ill. L1 .....6.50
Buffalo W12 .....6.275
Cleveland A7 .....5.275
Donora,Pa. A7 .....6.275
Duluth,Minn. A7 .....6.275
Johnstown,Pa. B2 .....6.275
LosAngeles B3 .....7.225
Minnequa,Colo. C10 ....6.525
Monessen,Pa. P7 .....6.275
Monessen,Pa. P16(42) ..6.40
NewHaven,Conn. A7 ..6.575
Palmer,Mass. W12 .....6.575
Pittsburg,Calif. C11 ...7.225
Portsmouth,O. P12 ....6.275
Roebling,N.J. R5 .....6.575
So.Chicago,Ill. R2 ....6.275
So.SanFrancisco C10 ...7.225
SparrowsPoint,Md B2..6.375
Torrance,Calif. C11 ...7.225
Trenton,N.J. A7 .....6.575
Waukegan,Ill. A7 .....6.275
Worcester,Mass. A7 ..6.575

WIRE, Fine & Weaving (8"Coils)
Alton,Ill L1 (43) 9.20
Bartonville,Ill. K4 .....9.42
Buffalo W12 (43) 8.90
Chicago W13 .....9.32
Cleveland A7 .....10.05
Crawf'sville,Ind. M8(43) 8.90
Fostoria,O. S1 (43)) 8.90
Johnstown,Pa. B2 (43)..8.90
Kokomo,Ind C16 (43).8.90
Monessen,Pa. P16 (43)..8.90
Muncie,Ind. I-7 (43) ...9.10
Palmer,Mass. W12 (43).9.20
Roebling,N.J. R5 (43) ..9.20
Waukegan,Ill. A7 .....10.05
Worcester,Mass. A7 ....10.35
Worcester,Mass. T6(43).9.20

WIRE, Tire Bead
Bartonville,Ill. K4 ....11.51
Monessen,Pa. P16 (43).11.40
Roebling,N.J. R5 (43).11.55

WOVEN FENCE, 9-15½ Ga. Col.
AlabamaCity,Ala R2 ...135
Ala.City,Ala.,17-18ga.R2 222
Aliqu'pa,Pa.9-14½ga.J5 1391
Atlanta A11 140
Bartonville,Ill.(19) K4 ..137
Crawfordsville,Ind. M8 ..138
Donora,Pa. A7 133
Duluth,Minn. A7 133
Fairfield,Ala. T2 133
Houston,Tex. S5 145
Johnstown,Pa. B2 138
Johnstown 17ga.,6" B2 .229
Joliet,Ill. A7 133
KansasCity,Mo. S5 149
Kokomo,Ind. C16 140
Minnequa,Colo. C10 ....146*
Monessen,Pa. P7 138
Pittsburg,Calif. C11 156
Rankin,Pa. A7 133
So.Chicago,Ill. R2 135
Sterling,Ill. (1) N15 136

*On 14c zinc; ‡17.5c zinc.

FENCE POSTS Col.
ChicagoHts.,Ill. C2 140
Duluth,Minn. A7 (49)...136
Franklin,Pa. F5 140
Huntington,W.Va. W7....145
Johnstown,Pa. B2 148
Marion,O. P11 140
Minnequa,Colo. C10 138
Moline,Ill. R2 136
So.Chicago,Ill. R2 140
Tonawanda,N.Y. B12 ...148
Williamsport,Pa. S19 ...158

Wire, Barbed Col.
AlabamaCity,Ala. R2 ...144
Aliquippa,Pa. J5 .....148‡
Atlanta A11 149
Bartonville,Ill.(19) K4 ..146
Crawfordsville,Ind M8 ..147
Donora,Pa. A7 148
Duluth,Minn. A7 148
Fairfield,Ala. T2 148
Houston,Tex. S5 154
Johnstown,Pa. B2 145
Joliet,Ill. A7 148
KansasCity,Mo. S5 158
Kokomo,Ind. C16 149
Minnequa,Colo. C10 ....153*
Monessen,Pa. P7 147
Pittsburg,Calif. C11 168
Rankin,Pa. A7 148
So.Chicago,Ill. R2 144
So.SanFran.,Calif. C10..167*
SparrowsPoint,Md. B2 ..147
Sterling,Ill.(1)N15 151

*On 14c zinc; ‡17.5c zinc.

BALE TIES, Single Loop Col.
AlabamaCity,Ala. R2 ...132
Atlanta A11 135
Bartonville,Ill.(19) K4 ..132
Crawfordsville,Ind. M8 ..132
Donora,Pa. A7 132
Duluth,Minn. A7 132
Fairfield,Ala. T2 132
Joliet,Ill. A7 132
KansasCity,Mo. S5 144
Kokomo,Ind. C16 134
Minnequa,Colo. C10 137
Pittsburg,Calif. C11 156
So.Chicago,Ill. R2 132
So.SanFran.,Calif. C10 ..156
SparrowsPoint,Md. B2 ..134
Sterling,Ill.(1) N15 143

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	127
Aliquippa,Pa. J5	127
Atlanta A11	130
Bartonville,Ill. (19) K4	127
Chicago,Ill. W13	127
Cleveland A9 (44)	125
Crawfordsville,Ind. M8	127
Donora,Pa. A7	127
Duluth,Minn A7	127
Fairfield,Ala. T2	127
Galveston,Tex. D7	135
Houston,Tex. S5	135
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S5	139
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	127
SparrowsPt. Md. B2	129
Sterling,Ill. (1) N15	127
Torrance,Calif. C11	147
Worcester,Mass. A7	133

NAILS, Cut (100 lb keg.) to dealers (33)
Conshohocken,Pa. A3 ..$7.80
Wheeling,W.Va. W10 ...7.80

RAILS	Std. No. 1	Std. No. 2	All No. 2	60 lb Under
Bessemer,Pa. U5	4.075	3.975	4.025	5.00
Ensley,Ala. T2	4.075	3.975	....	5.00
Fairfield,Ala. T2	....	....	....	5.00
Gary,Ind. U5	4.075	3.975	4.025	....
Huntington,W.Va. W7	....	....	....	5.00
IndianaHarbor,Ind. I-2	4.075	3.975	4.025	....
Johnstown,Pa. B2	....	....	....(16)	5.00
Lackflawanna,N.Y. B2	4.075	3.975	....	4.55
Minnequa,Colo. C10	4.075	3.975	....	5.05
Steelton,Pa. B2	4.075	3.975	....	....
Williamsport,Pa. S19	....	....	....	5.00

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	129
Bartonville,Ill. (19) K4	126
Chicago W13	127
Crawfordsville,Ind. M8	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	126
Minnequa,Colo. C10 (45)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	145
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
SparrowsPt.Md. B2	128
Sterling,Ill. (1) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

TRACK BOLTS (20) Treated
KansasCity,Mo. S5(46)..9.85
Lebanon,Pa. (31) B2...9.85
Minnequa,Colo. C10 ....9.85
Pittsburgh P14 .....9.85
Pittsburgh O3 .....10.60

AXLES
Ind.Harbor,Ind. S13 ..... 6.15
Johnstown,Pa. B2 .....5.65

TIE PLATES
Fairfield,Ala. T2 .....4.925
Gary,Ind. U5 .....4.925
Ind.Harbor,Ind. I-2 ....4.925
Lackawanna,N.Y. B2....4.925
Minnequa,Colo. C10 ....4.925
Pittsburg,Calif. C11 ...5.075
Seattle B3 .....5.075
Steelton,Pa. B2 .....4.925
Torrance, Calif. C11 ...5.075

JOINT BARS
Bessemer,Pa. U5 .....5.075
Fairfield,Ala. T2 .....5.075
Ind.Harbor,Ind. I-2 ...5.075
Joliet,Ill. U5 .....5.075
Lackawanna,N.Y. B2 ..5.075
Minnequa,Colo. C10 ...5.075
Steelton,Pa. B2 .....5.075

STANDARD TRACK SPIKES
Ind.Harbor,Ind. I-2 ....6.80
Ind.Harbor,Ind. Y1 ....6.65
KansasCity,Mo. S5 ....6.90
Lebanon,Pa. B2 .....6.65
Minnequa,Colo. C10 ....6.80
Pittsburgh J5 .....6.65
Seattle B3 .....7.15
So.Chicago,Ill. R2 .....6.65
Struthers,O. Y1 .....6.65
Youngstown R2 .....6.65

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	Mo	
18	4	1	....		1.505
18	4	2	....		1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675	
19	4	2	7		2.460
18.25	4.25	1	4.75		2.125
18	4	2	9		2.445-2.45
13.5	4	3	....		1.6025
9	3.25	0.5	....		1.01
W	Cr	V	Mo		
6.4	4.5	1.9	5		0.96-0.965
6	4	3	6		1.190
1.5	4	1	8.5		0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

FOOTNOTES
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.05c
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.
(46) Plus 2.2 per cent.
(48) 6-7 gage.
(49) U-post; add 2 cols. for T-post.

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2		2½		3	
List Per Ft.	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c							
Pounds Per Ft.	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62							
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	28.75	12.50	31.75	16.50	34.25	20	36.75	21	37.25	22	37.75	22.50	39.25	22.50	39.25	22.50						
Alton, Ill. L1 (††)	25.75	9.5	28.75	13.5	31.25	17	33.75	18.5	34.25	19	34.75	19.5	36.25	19.5	36.25	19.5						
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75						
Etna, Pa. N2 (†)	28.75	9.50	31.75	13.50	34.25	17	36.75	18.75	37.25	19.75	37.75	20.25	39.25	21	39.25	21						
Fontana, Calif. K1 (††)	15.75	0.50	18.75	3.50	21.75	7	23.75	8	24.25	9	24.75	9.5	26.25	9.5	26.25	9.5						
Ind. Harbor, Ind. Y1 (††)	27.75	11.50	30.75	15.5	33.25	19.0	35.75	20.0	36.25	21.0	36.75	21.50	38.25	21.50	38.25	21.50						
Lorain, O. N3 (*)	28.75	18.50	31.75	22.50	34.25	26	36.75	25.50	37.25	26.50	37.75	27	39.25	25.50	39.25	25.50						
Sharon, Pa. M6	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25						
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75						
Youngstown R2 (**)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25						
Youngstown Y1 (††)	28.75	12.50	31.75	16.50	34.25	20.0	38.75	21.00	37.25	22.00	37.75	22.50	39.25	22.50	39.25	22.50						
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25						

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (††)	18.25	2.5	22.25	5	24.75	7.50	26.25	9	26.25	9	26.00	8.75	28.50	11.25
Ambridge, Pa. N2 (†)	18.25	..	22.25	...	24.75	....	26.25	....	26.25	....	26.00	....	28.50	....
Lorain, O. N3 (*)	18.25	7	22.25	8	24.75	10.50	26.25	12	26.25	12	26.00	11.75	28.50	14.25
Youngstown Y1 (††)	18.25	2.5	22.5	5.0	24.75	7.5	26.25	9.0	26.25	9.0	26.0	8.75	28.5	11.25

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (**)	24	8.25	27	9.75	27	9.75	29	11.75	29	11.75	33.75	16.5	33.75	16.5

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		3½		4	
List Per Ft	5.5c		6c		6c		92c		$1.09					
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89					
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv				
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25				
Butler, Pa. F6 (†)	28	+1.25	22	+4.75	16	+9.5	..	....	..	....				
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.50	30.25	11.50	30.25	11.50				
Sharon, Pa. M6 (‡)	29.5	−1.75	23	+2.25	18	+5.25	..	....	..	....				
Sharon, Pa. S4 (†)	28.0	1.75	22.0	+1.75	16.0	+5.0	..	....	..	....				
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....				
Youngstown R2 (**)	..	....	..	....	..	....	33	15.75	33	15.75				
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....				

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; (**), 11.50c; (*), 5c; (††), 11c; with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.80	18.05–18.96	....	....
1¼	13	17.53	21.38–22.45	16.93	....
1½	13	19.37–20.34	23.63–24.81	18.16	....
1¾	13	22.89–24.72	27.92–30.16	20.28	....
2	13	25.65–27.71	31.29–33.81	22.73	....
2¼	13	28.89–31.20	35.24–38.06	25.62	....
2¼	12	31.36–33.87	38.25–41.32	28.31	....
2½	12	34.54–37.31	42.14–45.52	31.19	....
2¾	12	37.40–40.39	45.62–49.28	33.77	....
3	12	39.89–43.08	48.65–52.56	33.76	....

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	11
⅝-in. & ¾-in.	15
⅞-in. and larger	14
Longer than 6 in.:	
All diams.	8
Lag bolts, all diams.:	
6 in. and shorter	19
over 6 in. long	16
Ribbed Necked Carriage	15
Blank	30
Plow	30
Step, Elevator, Tap and Sleigh Shoe	18
Tire Bolts	8
Boiler & Fitting-Up Bolts	28

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	10	10
⅝-in. & ¾-in.	8	1
⅞-in.-1½-in.	4	+4
1⅝-in. & larger	22	1
H.P. Hex.:		
½-in. & smaller	12	+3
⅝-in. & ¾-in.	8	+3
⅞-in.-1½-in.	4	+3
1⅝-in. & larger	4	+3
C.P. Hex.:		
½-in. & smaller	22	18
⅝-in. & ¾-in.	19	13
⅞-in. & 1½-in.	15	8
1⅝-in. & larger	2	+4

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	33	26
⅝-in. & ¾-in.	27	19
⅞-in.-1½-in.	21	11
1⅝-in. & larger	5	list
		Light
⅞-in. & smaller	33	

½-in. to ¾-in.	26
⅞-in. to 1½-in.	18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	37
1 in. and smaller diam. x over 6 in.	24

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	40
¾-in. through 1 in.	26
Longer than 6 in.:	
⅝-in. and smaller	24
¾-in. through 1 in.	2

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 8.50c

⅞-in. under .....40 off

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+ % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	10.90
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots	78.00
Brass, 20-ton lots	30.00-39.00
Bronze, 10-ton lots	52.25-60.00
Copper:	
Electrolytic	45.75
Reduced	12.75*
Lead	7.50*
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	48.50
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	87.00
Zinc, 10-ton lots	17.50-25.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* plus cost of metal.

STAINLESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	44.25	36.50	33.75
302	44.50	39.75	34.00
303	46.50	43.50	36.50
304	46.50	41.75	35.50
309	60.50	59.25	48.25
316	61.50	63.50	53.00
321	53.00	52.00	40.00
347	58.00	56.50	44.75
410	39.00	32.75	27.50
416	40.00	40.00	28.00
420	47.00	50.25	33.50
430	41.50	33.25	28.00
501	29.25	27.75	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416 420, 501 & 502 A10

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Harrison, N. J., wire, Type 302, 33.00c; Type 304, 34.50c; Type 316, 51.50c, including 4.7% increase.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire 1-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, bars, shapes U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, strip A4.

Youngstown, strip C8.

CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302	....	....	19.75	26.24-27.50	77.00
304	25.00	29.50	34.50	27.50-27.77	77.00
309	30.50	35.00	....	....	....
310	36.50	41.00	....	....	144.00
316	29.50	34.00	26.00	35.92-36.50	....
317	34.50	39.00	....	....	....
318	33.50	38.00	....	....	....
321	26.50	31.00-32.00	23.00	33.00	111.00
347	27.50	32.00	24.00	33.50-33.83	130.00
435	21.25	27.75	....	....	....
410	20.75	27.25	....	....	....
Nickel	33.55	45.15	....	....	....
Inconel	41.23	54.18	....	....	165.00
Monel	34.93	46.28	....	....	....
Copper*	....	....	....	44.00	....

	Strip Carbon Base Cold-Rolled 10%	Strip Carbon Base Cold-Rolled Both Sides	Strip Carbon Base Hot-Rolled 10%	Strip Carbon Base Hot-Rolled Both Sides
Nickel	41.00	54.00	....	....
Copper*	23.70	26.65	20.20	26.40

* Deoxidized. Production points: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Baltimore	6.00	7.35	7.36	6.42	...	6.56	7.64	11.27	6.59	6.55	7.78
Boston	6.66	7.54	8.39	6.81	...	6.57	7.82	11.18	6.68	6.88	7.98
Buffalo	5.80	6.65	8.31	6.21	...	6.05	7.45	11.07	6.08	6.30	7.67
Birmingham	5.80	6.65	7.70[2]	5.80	...	5.80	8.62	...	5.95	6.10	8.15
Chicago	5.95	6.82	7.90	6.10	...	5.98	7.025	11.45	6.07	6.08	7.18
Cincinnati	6.28	6.89	8.26	6.40	...	6.28	7.38	11.87	6.54	6.55	7.60
Cleveland	5.95	6.82	7.55	6.27	...	6.04	7.10	11.59	6.40	6.25	7.51
Detroit	6.00	6.85	8.59	6.13	6.85	6.14	7.40	10.92	6.42	6.47	7.52
Houston	6.74	...	8.62	6.89	...	6.98	...	...	6.82	6.78	8.16
JerseyCity,N.J.	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Los Angeles	7.05	8.70	8.65	7.20	11.20	6.95	9.50	12.05	6.80	6.90	8.90
Milwaukee	6.12	6.99	8.07	6.27	...	6.15	7.30	11.62	6.24	6.25	7.35
Moline, Ill.	6.16	7.00	8.25	6.19	...	6.18	8.00	...	6.30	6.30	...
New York	6.54	7.45	8.72	6.82	...	6.75	7.90	11.84	6.50	6.67	8.01
Newark, N. J.	6.62	7.41	8.53	6.56	...	6.59	8.06	...	6.39	6.60	7.18
Norfolk, Va.	6.75	...	...	7.30	...	7.00	8.50	...	6.85	6.95	7.65
Philadelphia	6.11	7.25	7.70	6.45	8.30	6.54	7.66	10.79	6.17	6.24	7.37
Pittsburgh	6.30	7.30	7.92	5.94	...	5.83	7.01	11.34	6.30	6.30	7.18
Portland, Oreg.	7.80	9.05	9.30	7.50	...	7.25	9.75	...	7.25	7.05	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.73	...	6.58	6.68	7.80
St. Louis	6.25	7.12	8.05	6.40	...	6.28	7.43	11.75	6.47	6.43	7.58
St. Paul	6.47	7.31	8.56	6.50	...	6.49	7.92	...	6.61	6.61	7.84
San Francisco	7.15	8.40	9.50	7.25	...	6.85	9.50	12.55	6.75	6.90	8.90
Seattle-Tacoma	7.90	8.40	9.80	7.70	...	7.27	9.74	11.45	6.96	7.28	9.10
Spokane (city)	7.80	9.40	9.80	7.15	...	7.10	9.80	11.90	7.00	7.10	9.15
Washington	6.51	7.86	8.35	7.19	...	7.07	8.15	...	7.10	7.06	8.29

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [5]—1000 to 1999 lb.

Warehouse Steel Demand Remains Strong

Consumers making only few complaints about advance in prices and are encountering difficulty in placing orders for some products, notably flat-rolled items

Cleveland—With the approach of the vacation season warehouse operators anticipate some slackening in demand around end of June.

Currently, pressure appears as strong as ever for sheets and strip, bars and structurals. Demand for plates, however, is somewhat easier. In one instance, a local distributor turned down a mill tonnage of plates for July-August delivery.

Supplier stocks are noticeably improved as compared with some months back, but inventories continue unbalanced and distributors are unable to care for all of the requests coming to them, notably for sheets. A stove manufacturer for example, is having difficulty placing an order for 14-gage cold-rolled sheets.

Chicago — Because of continued strong demand steel warehouses are unable to improve inventories except on hot-rolled strip and galvanized sheets. Both products have been in the easy category recently. For the latter there has been some price shading. One important warehouse has adjusted its prices downward $3 to $4 a ton in a stated effort to eliminate certain slight irregularities which have existed and to make its prices more realistic. Typical adjustments are 10-gage dropped from $7.90 to $7.75; 12-gage from $8.10 to $7.95.

Philadelphia—Leading distributors believe that June business may show a slight easing, at least that is the normal trend. However, they all experienced sustained business in May on a day to day basis, and an actual gain on a dollar basis due to price advances reflecting recent increases in mill extras.

New York—Warehouse steel distributors have completed upward price changes to cover increases in mill extras. Demand is strong for most products with supply below inquiry on most finished steel. Structurals and cold-rolled sheets are especially tight.

Cincinnati—May business was as brisk as that in April. There is every indication discontinuance of allotments at the end of this month will have little effect on demand. Principal shortages in warehouse stocks are in cold-rolled sheets, bar size angles, structurals and seamless mechanical tubing.

St. Louis—Warehouse steel demand is undiminished but there is less urgency among buyers. Inventories have picked up, spottily, to perhaps 65 per cent of normal. Over-all warehouse items are in comfortable supply, but much depends on sizes.

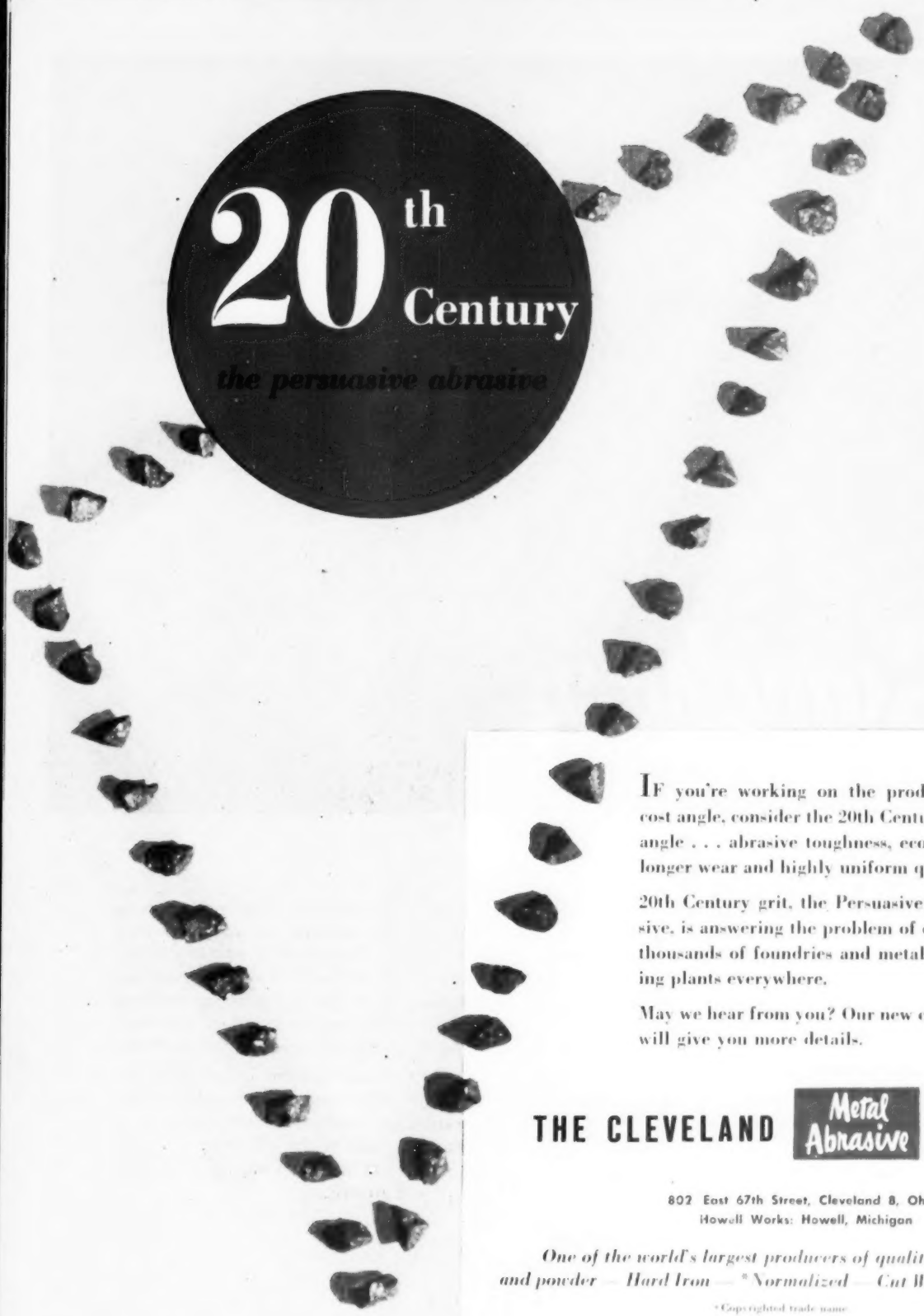
Pittsburgh — Warehouse inventories are building up. Product mix is unbalanced. Sheets, both hot and cold-rolled, are not plentiful. A complete range of diameters in bars is still in the future for warehouses, and more plates are needed in varying diameters. Customers want material and are not complaining about the passing-along of extras.

Los Angeles—Warehouse activity in April was slightly depressed. Distributors report orders are for smaller tonnages and inquiries are fewer.

Continuing the current price rise of warehouse products, the first since December, prices are 20 cents higher on structural shapes at $6.80, carbon plates at $6.90, and galvanized sheets at $8.65 per 100 pounds. Hot-rolled strip advanced 25 cents to $7.20.

San Francisco—Warehouses have lifted prices on a wide range of items from 15 cents to 70 cents a hundred pounds, reflecting recent boosts in mill extras. The higher quotations have proved no deterrent to demand.

Seattle—Warehouse order volume has increased following six weeks of slow business due to the metal trades strike. The immediate outlook is promising. Galvanized sheets are in good supply but structural shapes, particularly wide flange sections, and plates are tight with no relief sighted before fourth quarter.



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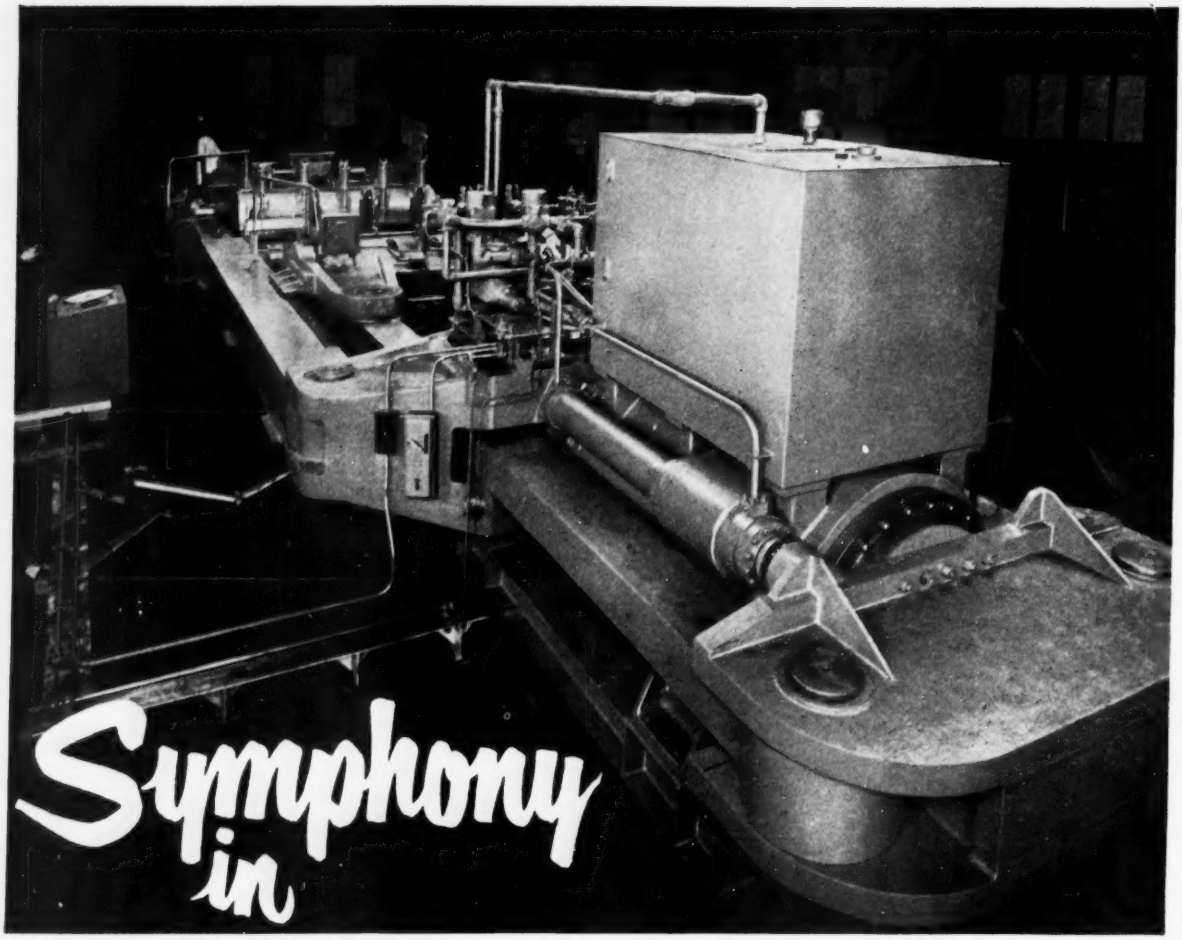

Steel

The giant machines that master tough metals are not usually quiet workers. Steel . . . iron . . . bronze . . . the many alloys—the casual visitor in a metalworking plant hears their voices as a discordant chorus. But to the man who knows modern machinery and its work, their sound is part of the great symphony of American industrial achievement.

Many of the precise and powerful special machines that play an important part in this "symphony in steel" have been built in the Sun Ship plant. Clients who need special machinery—of which the 2000-ton hydraulic metal stretcher machine shown above is a good example—have learned that Sun Ship's various shops and facilities are designed and coordinated to do special machinery-building jobs with precision and speed . . . and they turn out machines with the same fine qualities.

The men and management at Sun Ship are fittingly proud that their ability in plate work, fabrication and machinery building has contributed for years to the efficiency of many great plants and industries engaged in building a greater America.

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Sheet Mills Booked Up Through Summer

Indicated substantial carryover from second quarter along with heavy new bookings preclude possibility of much open tonnage in third quarter

Sheet and Strip Prices, Page 131 & 132

Cleveland—Pressure on the sheet mills shows no signs of easing off. Producers are booked virtually full for third quarter and the carryover from the second quarter will be so large it is a virtual certainty there will be no open tonnage available over the summer, barring, of course, cancellations of orders now on books.

Key to the current tight situation continues in automotive demand. Appliance needs also are pressing though less so than some weeks back. Should there be any substantial lessening of pressure from these large consuming areas tight sheet supply conditions would quickly vanish, especially with new capacity scheduled to come into production over coming months.

Meanwhile, however, there is as yet nothing in the market to indicate any early slackening in automotive needs.

Boston—With third quarter flat-rolled order books filled, demand pressure has slackened, although many consumers have not been able to place all the tonnage they want for the period. Demand for hot and cold-rolled carbon sheets is unabated, and specialties, silicon, enameling and stainless, are relatively in just as tight supply.

To offset some mills withdrawing from the market on carbon sheets in this area, more volume in 13-gage and heavier up to 38 inches is expected from the Fairless Works by late July.

Narrow cold strip converters, booked up through third quarter, will be fortunate to obtain hot-rolled tonnage in sufficient volume to meet their commitments.

New York—In general, sheet producers opened their books for the entire third quarter, and almost without exception they are now completely booked up on hot and cold-rolled sheets, and on certain specialties, such as enameling stock and electrical sheets.

While there is some improvement in demand for galvanized, there is still a lag with the result that most producers have some tonnage available for August and September. Close shopping would likely develop some tonnage for July.

Philadelphia—All major grades of sheets are in active demand except galvanized, and even in this latter grade producers are able to sell output. Some minor concellations in galvanized sheets are reported but producers have no difficulty in disposing of the tonnage.

Pittsburgh—No sag in sheet demand is seen for some time to come. Most producers, however, anticipate a scramble for business in the future with substantial additions to sheet-making capacity on the way. Pittsburgh Steel Co. is making test runs on its new mill at Allenport, Pa., and is expected to have eventual capacity of 600,000 tons of sheets annually. By end of this year tonnage will be coming from other facilities now under construction. Add to this the larger sheet tonnage available from continuous mills when they discontinue producing light plates and a possible sheet surplus for the not distant future is seen.

Chicago—Sheets continue to be the tightest of all steel products with no indication of any sizable reduction in over-all demand. This applies to both hot and cold-rolled. By all odds it is the automotive pressure that is most persistent but all other areas of consumption are strong too, even including household appliance and farm equipment. One measuring stick is interest in conversion tonnage. Both of the latter consuming groups still use conversion where necessary to balance out inventories and keep production on their lines rolling.

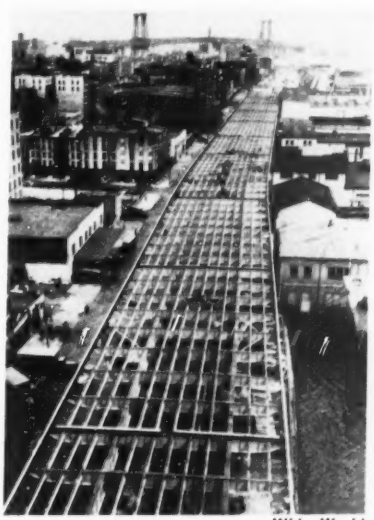
Cincinnati—Sheet mills are optimistic about the sheet and strip outlook for fourth quarter. There is a lot of pressure developing for commitments in that period. Over-all output is high with constant changes in product mix. A carry-over of delinquent rated tonnage will result when allocations end.

St. Louis—Sheet demand in this district holds up well but calls for conversion steel are declining, possibly because conversion tonnage is booked up. Some August slab tonnage is available. Granite City Steel Co. will open fourth quarter books in two weeks. It recently re-entered the hot-rolled sheet market and now reports third quarter tonnage is all allocated.

Birmingham—Inquiry for sheets continues heavy. While cold-rolled sheet backlogs may not be quite so heavy as in past months, there is little real difference in the supply and demand situation. Galvanized sheet demand, which has not been too heavy, has picked up somewhat.

Fontana, Calif.—Two new stands of rolls are being added to the present four-stand hot strip mill of Kaiser Steel Corp. Present schedules indicate the rolls will be in operation by October, enabling the company to roll sheet in thinner gages.

Los Angeles—Flat rolled steel supply situation will worsen when Kaiser Steel Corp. Fontana Works closes down for two weeks in July for repairs to soaking pits. To be added at that time are two new stands to the 86-in. mill to extend sheet rolling limits from 13 to 16 gage.



Wide World

Highway's Steel Base

Twenty per cent of the steelwork on the 1.61-mile South street elevated highway, which will run from Jackson street to the Battery underpass, Manhattan, has been completed. This view shows part of the $11 million project

Pittsburgh Mill In Test Run

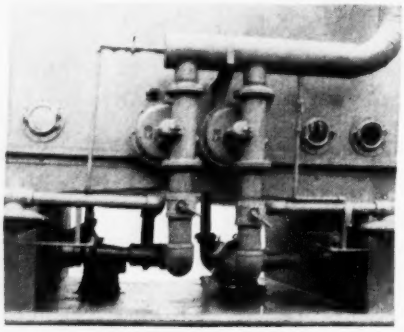
Pittsburgh—First test runs were started last week by Pittsburgh Steel Co. on its new hot mill for rolling sheets at Allenport, Pa. The mill will not start large-scale commercial production until after a break-in period is completed. It is a 66-in. semi-continuous 4-high hot sheet and strip mill.

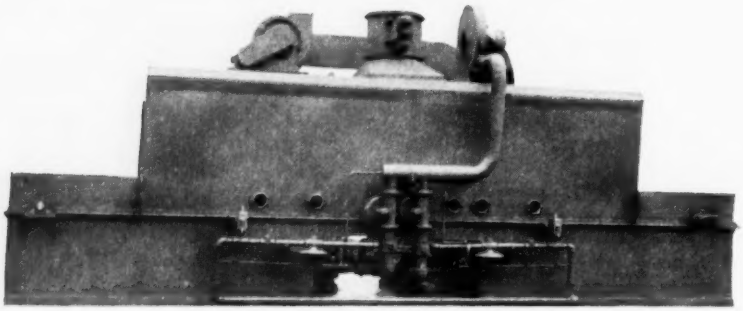
Facilites for cold-rolling are under construction adjacent to the hot mill, and are expected to begin operations later this year. With both mills producing, output of hot and cold-rolled sheets will run to 600,000 net tons annually.

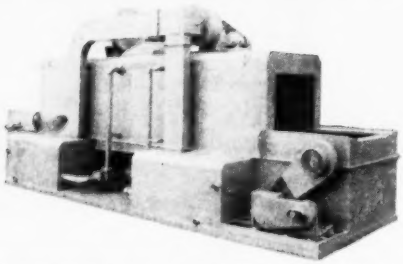
Completion of the hot mill concludes another step in the company's

PD

Machined Parts Need Their "Backs" Washed







The Gas-Fired Cabinet Type Power Spray Washer shown above is efficiently designed for cleaning parts after machining—a most important, between-operations step in obtaining the quality results so necessary for modern metal finishing. Peters-Dalton engineers were called upon to design and construct this highly efficient power spray washer —a real "backwasher"—with a "shower bath" that literally blasts the machined metal clean with jets of water under high pressure.

How about your industrial washing problems? Metal cleaning equipment should be designed for a specific product and process. PD engineers, with their extensive background and varied experience in the field, are ready and able to discuss your problems for between-operation cleaning or paint preparation. If you would like to hear more—write, wire or phone.

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$62.8 million expansion program, started in 1950 and which includes: Increase in blast furnace capacity by 12 per cent; increase in open-hearth capacity by 48 per cent; construction of five new soaking pits and installation of a 66-in. high-lift blooming-slabbing mill; increase in finishing facilities of 82 per cent.

First commercial production from the new hot sheet mill will mark entry of Pittsburgh Steel Co. into the steel sheet market.

Steel Bars . . .

Bar Prices, Page 130

Boston—Small size cold-finished bar supply comes nearer to meeting demand than is the case with other bar classifications, but supply conditions may tighten unless converters' hot-bar needs are more readily filled.

Third quarter schedules are filled and some alloy volume has been booked for fourth quarter.

Consumers are limited in revising the pattern of their specifications to avoid paying higher extras. For sulphur grades users are paying up to $12 more per ton. Where shops require only two or three sizes and grades substitution is difficult.

Shortages in larger sizes continue, due primarily to military requirements. Users of bar specialties taking additional processing are paying in full for more man hours per ton involved.

New York—Although some producers of hot carbon bars have not yet opened their books for the entire third quarter, there is plenty of tonnage to be had should they care to do so. Some are now opening books on alloy bars for fourth quarter, but report no particular pressure at this time. Actually, despite the longer time required for processing, some producers can still work in some tonnage for late August and September.

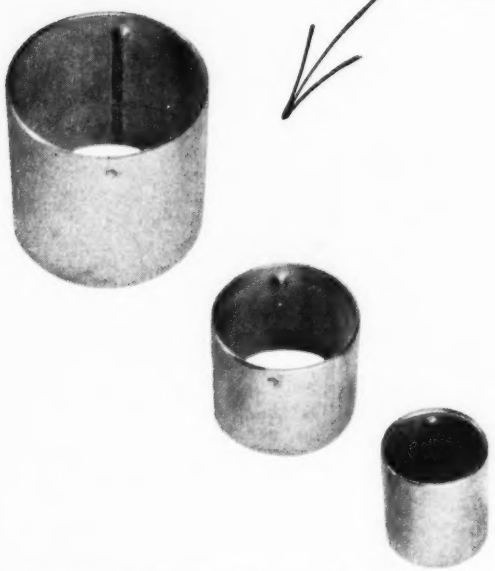
Philadelphia—Hot carbon bar business remains active, with particular stringency in sizes 2½ inches and up, which reflects shell work.

Pittsburgh—Steel bar consumers are revising specifications wherever possible in order to take advantage of lower extras. For example, by changing grades one consumer saved himself $1 per ton. Bar demand remains strong.

Cincinnati—The supply of carbon bars remains short. Few buyers appear price conscious since the change in extras, and demand is holding up well. Mill deliveries of alloy bars have softened to help the warehouses gain extra tonnages, in some cases. Demand for alloy bars is also strong.

Los Angeles—Bar demand for sizes

Dentists Can Tell You Why Stainless Tubing for <u>These</u>



Dental molding flasks and saliva ejector stand up under constant use, because they are made from Carpenter Stainless Tubing. The flasks withstand temperatures up to 1700° F., while the ejector is frequently sterilized.

Fabricators can tell you why it's easy to work with *Carpenter* Stainless Tubing!

Reports from dozens of experienced fabricators tell us that there are two reasons why it's easy to work with this tubing. First, analysis-tolerance-finish (and specials such as hardness) are always just the way you want them. That eliminates a lot of problems at the start of any job. Second, they tell us that the personal help they can get on any Stainless Tubing job helps to keep unit costs as low as possible.

When you want to discuss your design or fabricating problems, call your nearest Carpenter Stainless Tubing Distributor. He will be glad to put his experience to work on your essential jobs, and to help you plan for the future, too.

THE CARPENTER STEEL COMPANY

Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Company, Port Washington, N. Y.—"CARSTEELCO"

Carpenter

STAINLESS TUBING

—guaranteed on every shipment

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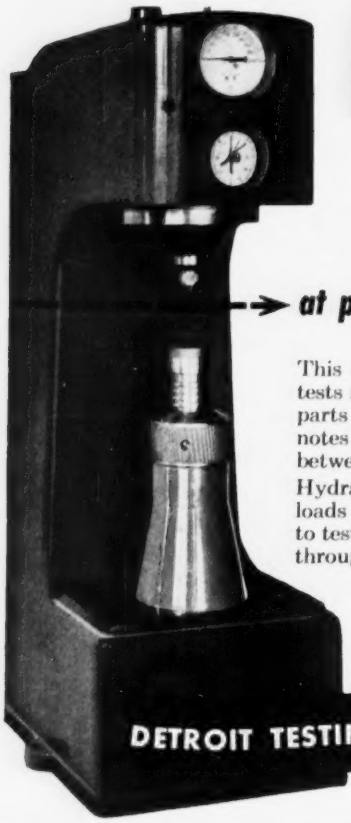

Brinell Testing

→ at production line speeds! →

This direct reading Brinell hardness tester tests round or flat parts *fast*. No grinding of parts is necessary and the operator simply notes that the dial indicator needle falls between pre-set tolerance hands.

Hydraulically applied standard Brinell test loads are used. Foot control allows operator to test parts as quickly as he can move them through the machine.

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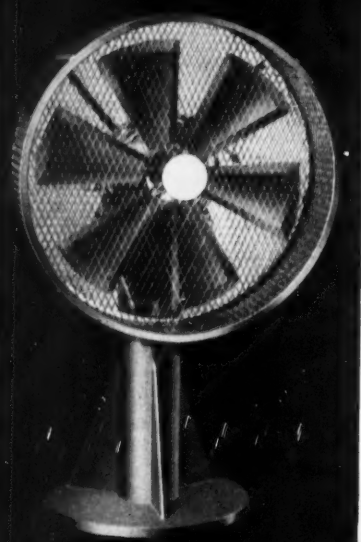

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above 1⅜ in. is strong but supplies are spotty. Rounds under ½-in. are in good supply. Output of cold-drawers is down 30 per cent due to shortage of hot-rolled bars. Allocations to cold-drawers in July are reduced 40 per cent due to shutdown that month by Kaiser Steel Corp. Fontana Works and Columbia-Geneva Division, U. S. Steel, for repairs and vacations.

Plates . . .

Plate Prices, Page 130

Philadelphia—Plate producers anticipate as much business as they care to handle in third quarter, and while admitting the possibility that volume may be off in fourth quarter, they do not expect any sharp drop.

Some platemakers have not yet opened books beyond August, except where heads are involved and, of course, except where tonnages carry magic numbers. Principal demand in this area appears to be coming from oil companies for pressure vessels and tanks.

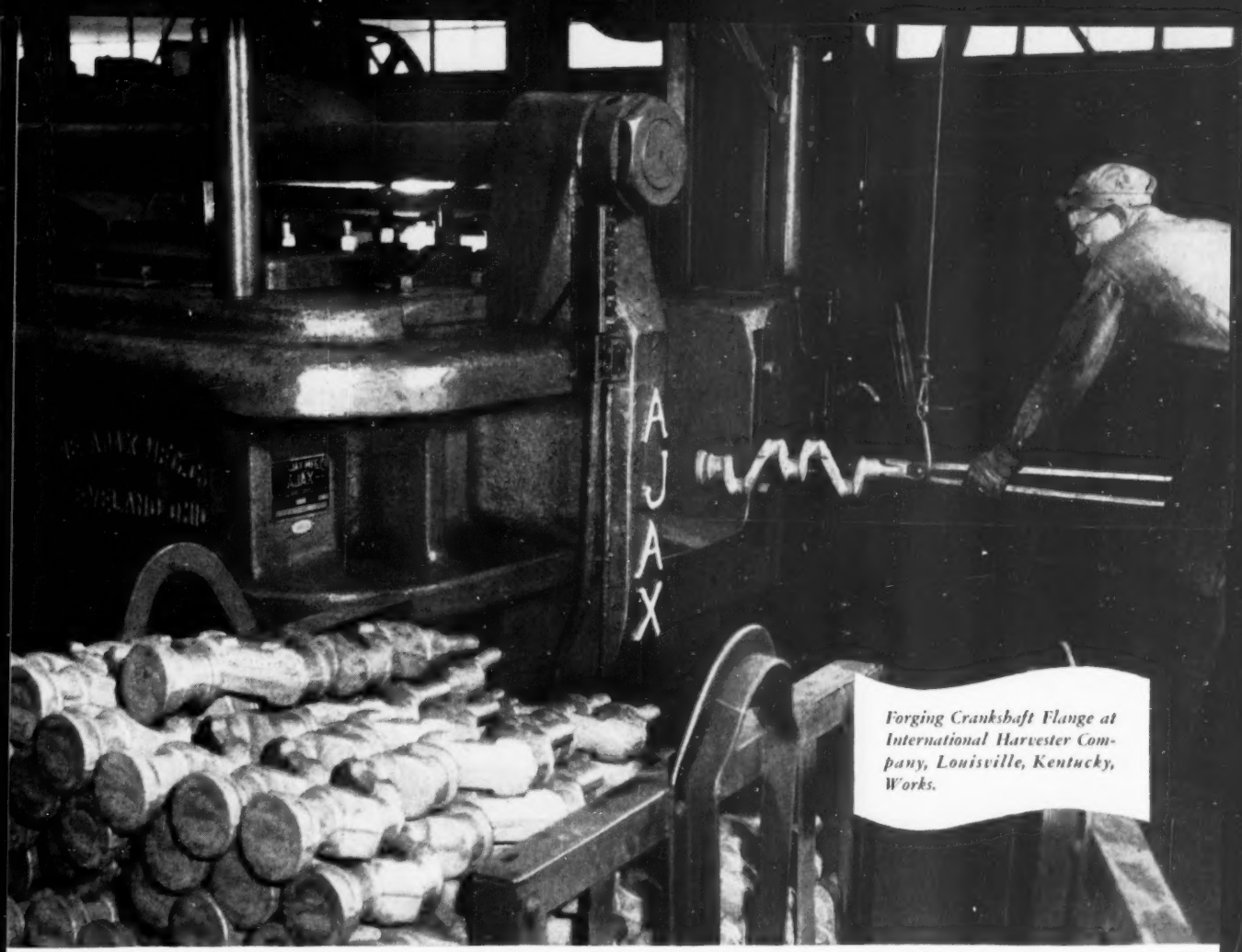
Public utility requirements are holding up well, also fabricated pipe needs. Railroad and ship requirements are lagging.

New York—Apart from ship work, plate demand here continues brisk. There is considerable pressure vessel work for oil companies and a well sustained volume of specifications from pipe fabricators. Boiler shops still complain over their inability to obtain as much pipe tonnage as they desire. However, most are able to obtain enough plates to sustain good operations on a single turn basis.

Boston — Plate fabricating shops are confronted with passing on higher costs brought about by extras and, in some cases, increased labor costs. This includes alloy as well as carbon. New alloy extras include $8 for drawing quality, size extras, $8 to $19 higher, and an odd gage extra of $3.

Some mills are booked up through third quarter, but others, operating on a monthly basis, have part of September open. This space could be readily filled but producers still parcel out tonnage. Tightening in narrow and light plates is in prospect with three sheet-strip mills back on sheet production.

Birmingham—Most of the territory's plate requirements are dependent upon Birmingham production since the greater part of the Gadsden output continues to go into tubes. This means demand beyond the ability of local capacity and with little prospect of any change in that situation within the next few months.



Forging Crankshaft Flange at International Harvester Company, Louisville, Kentucky, Works.

★ Another job for the AJAX Upsetter

In forge shops all over the world, AJAX Upsetting Forging Machines are being chosen as the best piece of hot metal working machinery for a wide variety of jobs in diversified fields of forging. Some forge shop operators favor AJAX Upsetters because of the steady production flow from these air clutch operated machines. Other shop operators may choose the AJAX because the greater rigidity and more accurate alignment provide better filling of the die impressions with a minimum of flash. While still others may be thinking of the saving of the wear and tear on manpower due to the ease of operation.

With all of these important advantages and economies, it is very natural that Ajax Forging Machines continuously maintain a high percentage of productive time.

WRITE FOR BULLETIN 65-C

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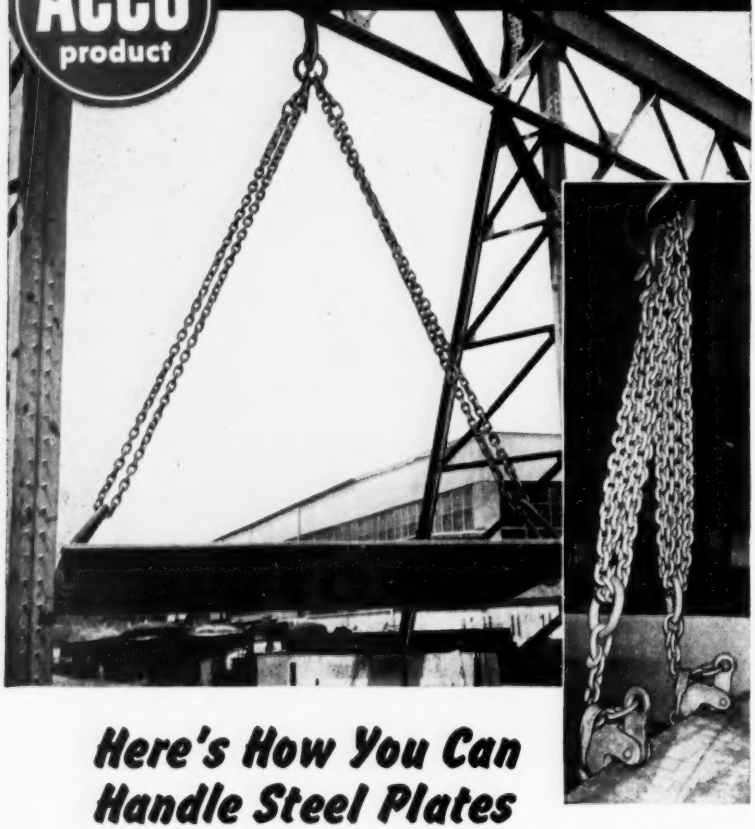

Here's How You Can Handle Steel Plates

• These pictures show only two applications of an AMERICAN 125 Endweldur alloy ACCO *Registered* Sling Chain with ACCO series 80 Sling Hooks. The 2 legs are long enough for use with various length plates. They can also be used in a double-basket hitch for lifting two or more plates together.

The big advantage in using this AMERICAN Chain is in the small diameter, light weight, and great strength of the tough alloy chain, and in the short links which make the chain so flexible and easy to rig. See it in the right hand picture above.

Inside the plant this same sling chain is used in a wide variety of lifts on castings, housings, and finished machines. It has become sort of a "jack-of-all-trades."

AMERICAN makes sling chains for every use with ACCO grab, sling, foundry, and special hooks. Note (*above*) the two ACCO *Registered* Sling Chains on the plate grabs. The ACCO Sling Chain Catalog gives you full information on America's finest chain slings—AMERICAN.

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American Chain

Carbuilding, shipbuilding and repair needs are active.

Seattle—Except for the Ferndale refinery, involving 9000 tons of plates, no large plate jobs are up for immediate action. Several storage tank projects are on bids in this area. Many plants are trying to clean up back business following settlement of the 6-week metalworking strike.

Semifinished Steel . . .

Semifinished Prices, Page 130

Pittsburgh — Pittsburgh Steel Co. has boosted its tonnage output from 1,072,000 to 1,500,000 net tons. Twelve open hearth furnaces at the company's Monessen works have been enlarged from 150 to 250-ton capacity.

Structural Shapes . . .

Structural Shape Prices, Page 130

Pittsburgh—No letup in demand for structural steel seems imminent. Thus far, carbuilders are not able to get all the steel they seek. Overall, shape producers will find themselves with substantial carryovers in July. Producers are expected to book only tonnage for third quarter that they can deliver during that period.

Boston — Structural fabricating shops have heavier backlogs and are confronted with the problem of buying plain material to fill orders. Balance between demand and supply in structural material appears extended. Larger shops are extended to March on girder work and January on beam fabrication. Slightly more tonnage is being estimated and placed. Increase in plain material costs is not fully reflected in new contracts.

New York—Featuring structural demand are 11,000 tons for a state high level bridge in Buffalo. Structural demand in general is spotty.

Philadelphia—While some shape producers are booked up through third quarter, at least one large mill, booking on a month-to-month basis, will have all allotments for August completed by June 15. Most fabricators have substantial backlogs, but report a leveling off in all lines of construction with the possible exception of bridge work.

Los Angeles—Producers of shapes are watching closely distributors' orders for bar sized shapes and light structurals. Warehouse stocks in those products are reported building up and may soon be in balance with demand.

Seattle — Heavy placements of structurals are scheduled for the near future. Among them are 5000 tons

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Our quota can ONLY be met, if those who give *keep on* giving . . . regularly!

You CAN give more than once . . . as often as every three months with complete personal safety. The more often you give the more often you save a life. For every pint of blood you give goes to someone who needs it desperately.

Remember . . . once is NOT enough. Give blood again and again! Call your Red Cross, Armed Forces or Community Blood Donor Center for an appointment to give blood today.

GIVE BLOOD

...give it again and again

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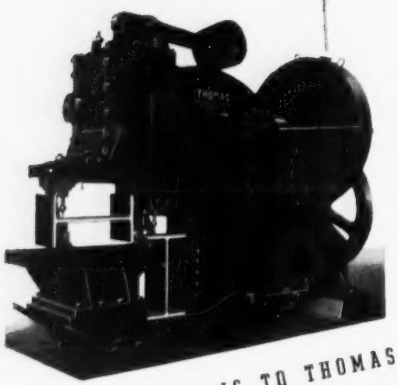
If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ◯ HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS?
- ◯ HAS YOUR COMPANY GIVEN ANY RECOGNITION TO DONORS?
- ◯ DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- ◯ HAVE YOU ARRANGED TO HAVE A BLOOD-MOBILE MAKE REGULAR VISITS?
- ◯ HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM?
- ◯ HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- ◯ WAS THIS INFORMATION GIVEN THROUGH PLAN BULLETIN OR HOUSE MAGAZINE?
- ◯ HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- ◯ HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a **single** pint of blood may mean the difference between life and death for **any** American . . . the need for blood is **urgent!**

NATIONAL BLOOD PROGRAM

BEAM PUNCHING
without tool change



THE newly designed Thomas Beam Punches are built in sizes to handle beams up to 12"-18"-24"-30" and 36", web and flange punching, with a single tool set-up. Any of the five sizes may be used with or without a Thomas spacing Table, depending on production needs.

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for the Fairchild Air Field hangar, 2800 tons for 10 nose docks at the same installation, 3000 tons for The Dalles powerhouse and 2100 tons for Bonneville transmission towers, bids in.

Wire . . .

Wire Prices, Page 132

Boston — There are openings in third quarter schedules for most wire products. Some consumers are deferring shipments on upholstery spring wire, chiefly furniture springs.

Base price increases have accompanied higher extras on some wire products, mostly specialties, including cold heading stock.

Manufacturers' wire demand is steady, but exerts no unusual pressure on producers. Plain galvanized wire is slow. There is no feverish demand for alloys.

With wire consumers in general, increased cost of their raw material gives more concern than supply.

New York—Contract for about 1250 tons, galvanized steel camouflage wire, 54,481 rolls, will probably be distributed among several producers; bids are in to Corps of Engineers, New York.

Birmingham—Wire products have been in somewhat weak demand for the past several months but currently are showing signs of picking up. A comfortable supply of manufacturers' wire is available and nails are plentiful.

Los Angeles—Wire buying is active with heavy demand stemming from large automotive and bed-spring makers' requirements. Bethlehem Pacific Coast Steel Corp. deliveries are 45 days.

Tubular Goods . . .

Tubular Goods Prices, Page 133

St. Louis—Laclede Steel Co. increased prices on galvanized and black pipe by reducing carload discounts 2 to 8 per cent. Galvanized demand is holding unexpectedly steady. Jobber orders for the coming quarter are arriving as fast as ever. Demand pressure dropped moderately last quarter, probably because a few jobbers had achieved an inventory. High residential construction rate here is holding up galvanized demand.

San Francisco — Salt Lake Pipe Line Co., subsidiary of Standard Oil Co. of California, has awarded a $4.5 million contract to Dyles & Young, Avenal, Calif., for construction of a 135 mile, 8-inch petroleum pipeline

(*Please turn to Page* 151)

want quality and service *in* machinery steels?

Then Crucible MAX-EL Machinery Steels will satisfy your appetite. For each MAX-EL bar is subjected to the most rigorous set of inspections to make certain that it conforms to Crucible's high standard of uniform quality.

And dependable delivery service is another thing you can count on with Crucible. Crucible warehouses are located in major cities throughout the country to provide you with quick, short-haul deliveries of MAX-EL machinery steels and the many other quality brands of Crucible special purpose steels.

For quality and service in specialty steels, call your nearest Crucible warehouse.

Stocks maintained of:
Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . AISI Alloy, Max-el Machinery, Onyx Spring and Special Purpose Steels

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CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: $227, Johnstown, Pa.; $226, Anaconda, Mont. (Mn 74-76%, C 7% approx.) Base price per net ton $200, Etna, Pa.

Shipment from Pacific Coast warehouses by one seller, add $32 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C. 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max. C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max. Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max. Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump bulk 24.75c per lb of contained Cr., c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr. 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb of contained Cr. C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr. 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c; prices on 0.10 per cent carbon grade, C grade, $1.12 per lb of contained chromium, up 4c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered, Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c Freight allowed. Spot add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c. freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c. (Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max) Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx. Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicax Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ⅛" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

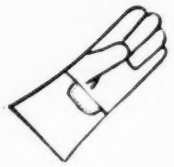
V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

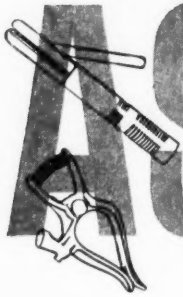
Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.



WELDING ASSISTANTS



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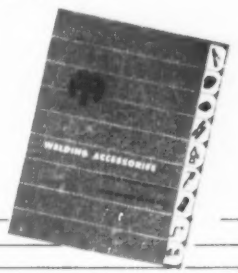

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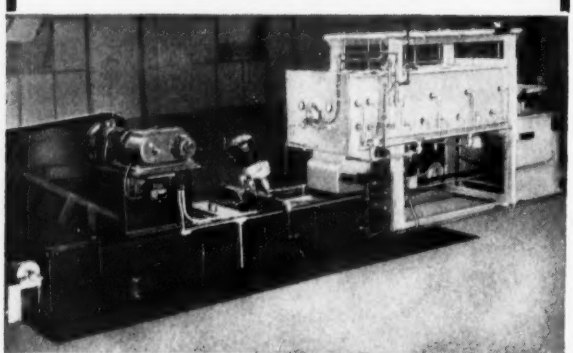

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ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in Italic.

ORES

Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Old range bessemer	$10.10
Old range nonbessemer	9.95
Mesabi bessemer	9.85
Mesabi nonbessemer	9.70
Open-hearth lump	10.95
High phosphorus	9.70

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 45% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $104.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $99.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $140.90.

Nozzles

Reesdale, Pa., $203.20; Johnstown, Pa., $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connelsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar, Tex. ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-23.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

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Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38.

Imported, net ton, duty paid, metallurgical grade, $35-$36.

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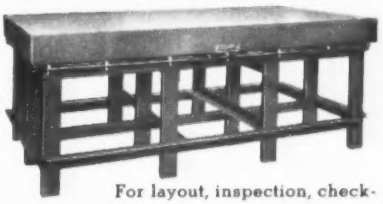

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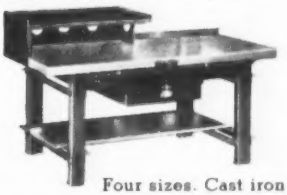

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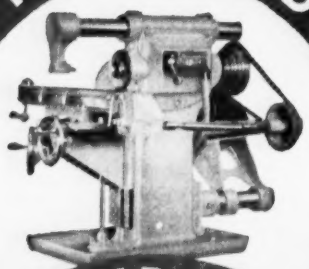
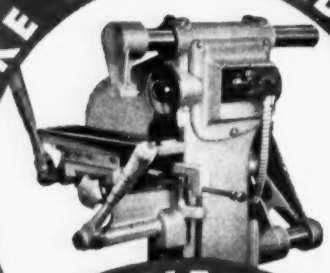


BURKE HAND FEED NO. 3



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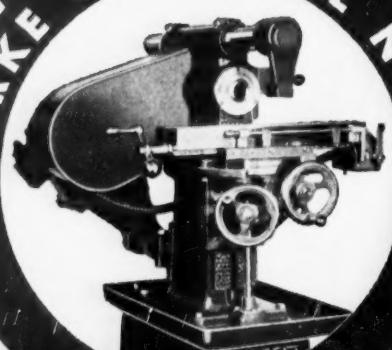

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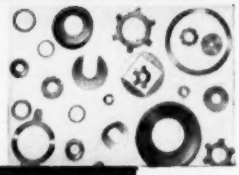

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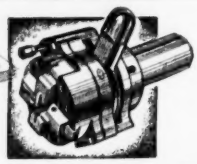

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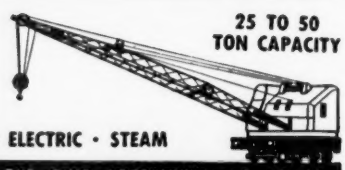

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Tubular Goods . . .

(*Continued from Page* 144)

from Pasco, Wash., to Spokane. The pipeline firm now operates a 570 mile line from Salt Lake City to Pasco. Construction on the extension will begin next month.

Seattle—Cast iron pipe market is not active although awards of 650 tons on a local and an Oregon job are pending. New projects up for bids include 350 tons at Enumclaw, Wash., and 400 tons for two Seattle district improvements, bids in.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 130

Seattle—Order backlogs extend into third quarter and a large volume of small tonnages is in prospect. The Reinforcing Division, Joseph T. Ryerson & Son Inc., reports several reinforcing jobs under 100 tons each.

Iron Ore . . .

Iron Ore Prices, Page 149

Cleveland — Iron ore is moving from the head of the lakes in record-breaking volume. May statistical report of the Lake Superior Iron Ore Association shows the lake fleet moved 13,596,829 gross tons during the month.

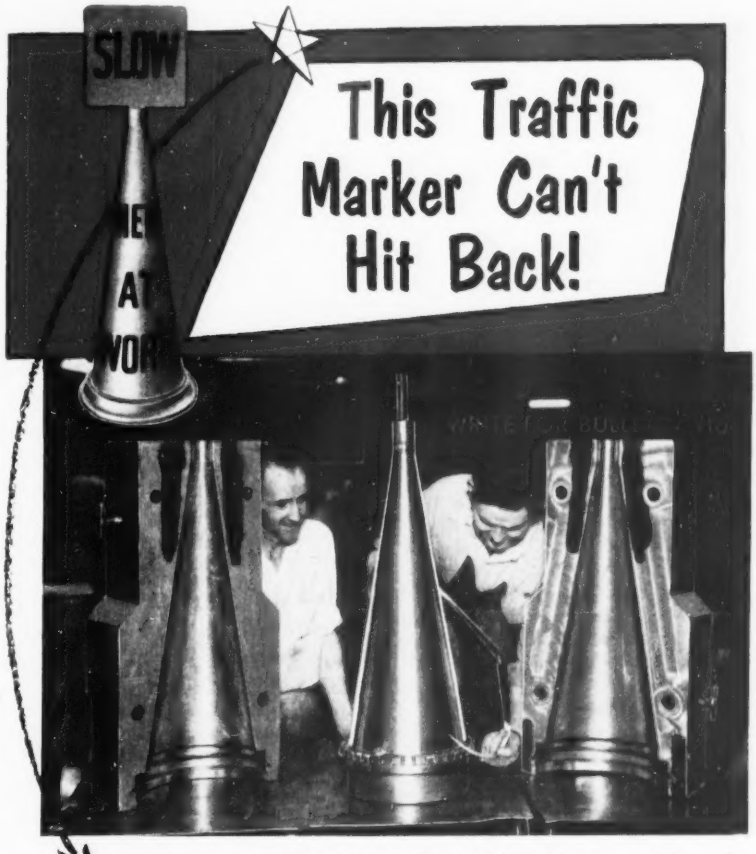
This topped the movement in the like month of 1952 by 1,099,745 tons, and exceeded the previous May record of 12,677,356 tons, set in 1942, by almost 1 million tons. In only two previous months, August and September of 1952, were monthly shipments greater.

Lake ore shipments to June 1 this year totaled 22,313,477 tons, increase of 3,284,297 tons compared with shipments in the like period of the 1952 season.

With weekly shipments continuing to climb vessel operators are increasingly confident they will bring down from the head of the lakes more than 100 million tons of ore during the 1953 season, barring, of course, strike or other shipping interruptions.

In the week ended June 1, shipments were 3,204,941 tons, comparing with 2,961,737 in the like week of last year, and with the all-time weekly record movement of 3,384,481 tons established in early September, 1952.

The 64 lake carriers of the Pittsburgh Steamship Division, U. S. Steel Corp., hauled 3,821,000 gross tons of ore during May for a new fleet record. In addition to the ore carried by the Pittsburgh fleet, another



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- The TRAFFICONE'S cone molds were speed-machined from Speed Treat (X1545) Plate Steel by Tri-Angle Tool & Machine Works, Los Angeles, California, for the Interstate Rubber Products Company, Los Angeles, makers of TRAFFICONES. Tri-Angle reports "wonderful success with this free machining steel over a number of years" and particularly like Speed Treat's low grinding and polishing costs and high lustre readily obtained.
- Speed Treat is widely used for rubber molds, plastic cavity retainer plates, short run trimming and blanking dies, punches and machine parts. Especially suited for flame or induction hardening as well as other treatments. Can be welded, brazed. Ask the nearest Speed Steels distributor.

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Produced by W. J. Holliday & Co., Inc., Speed Steel Plate Division, Hammond, Indiana. Plants: Hammond and Indianapolis, Indiana

1,080,000 tons were moved to U. S. Steel furnaces in chartered vessels during the month.

In the 1953 season to June 1 the Pittsburgh fleet moved 7,091,000 tons, which is 881,000 tons above the previous season mark.

Pig Iron . . .

Pi Prices, Page 126

Cleveland—Except for a tight supply situation in silvery iron, the merchant pig iron market is without feature. Foundry demand con'inues sluggish except for automotive shops and some on defense work. No surplus stocks of iron are reported at furnaces, however, tonnage movement just about equalling output.

The shortage of silvery iron results from the 3-months shutdown of the Jackson, O., furnaces by a strike. This was ended last week but it will be some time before supply conditions are back to normal. While the Globe furnace will resume production as quickly as possible, the Jackson furnace will be down for some time pending completion of rehabilitation work which was delayed by refusal of construction workers to cross picket lines during the period of the strike.

Meanwhile, regular customers of the Jackson furnaces are obtaining supplies from other sources, including tonnage from Canada.

Youngstown—U. S. Steel Corp. has indefinitely postoned shutdown of its No. 4 blast furnace at the Ohio Steel Works. The furnace, a 930-ton unit, had been scheduled for blowing out June 1 for repairs.

Cincinnati—The 3½ months old strike at the Jackson Iron & Steel Co. and the Globe Iron Co. furnaces at Jackson, O., has this area badly upset. These two companies are suppliers of silvery iron. Pig iron supplies are expected to change little.

Buffalo—District blast furnace operations are expected to jump 6 points to 94 per cent of capacity within a week as one of two idle stacks is relighted. Iron sellers report no difficulty finding outlets for current production. Most of the iron output is going into steel production but merchant sellers report automotive consumers here and in Michigan are buying actively.

Philadelphia — Continued lag in gray iron foundry operations is reflected in pig iron buying. With vacations coming up sellers anticipate further easing in specifications before an autumn upturn develops. They look for the first two weeks in July to mark the low point.

Pittsburgh—Little increase in pig iron consumption is reported here. Foundries are settling back to a normal operating routine. Some drop in district production of pig iron will be felt with the taking out of No. 4 blast furnace at Duquesne Works, U. S. Steel. Furnace will be out of operation about 30 days.

Chicago—Tempo of foundry operations this summer apparently is going to be determined by strength of automotive demand. Thus far there is no indication of the usual seasonal dip while shops close for vacations. Iron continues in good demand and there is enough tonnage to meet it. Consumers want their full quotas despite vacation interruptions. Youngstown Sheet & Tube Co. relighted its No. 2 blast furnace at Indiana Harbor, Ind., down since Apr. 14 for relining.

St. Louis—Foundry iron consumers formerly supplied by Granite City Steel's blast furnaces have been notified the two stacks, one of which is overdue for relining, will not return to foundry iron production for an uncertain period. Heretofore one stack has been converted to foundry

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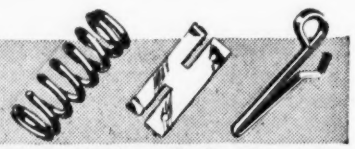

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every three or four months. Both currently are engaged in production of basic pig iron.

Birmingham—Pig iron consumption is off considerably from the peak of a few months ago. Foundry operations generally are slowed down and cast iron pipe plants are on reduced schedules. Merchant iron producers, however, anticipate a general pick-up in the fall but believe the terrific pressure of a year ago is gone for good.

Fontana, Calif.—Kaiser Steel Corp. has completed its third blast furnace at its steel plant here, making another 438,000 tons of iron available yearly. Identical to the two other furnaces, the third unit boosts Kaiser Steel's pig iron output potential to 1,314,000 tons a year.

Seattle—Foundries in this area are again in operation following ending of a strike in effect for the past six weeks or so. Satisfactory order backlogs are reported. Pig iron supply is ample. Domestic iron is available to the end of the year. Consequently, there is no current interest in imported material such as was evidenced some time back.

Scrap . . .

Scrap Prices, Page 154

Chicago — A slight firming up is noted in scrap prices here despite generous supply of material and absence of large-scale buying. For the moment a stabilizing influence appears to be in effect. Strongest price pressure seems to be in the blast furnace grades and there is little unanimity of opinion as to what correct prevailing figures are. Consumption of scrap is heavy with mills engaged at 105 per cent of capacity.

Boston—Several grades of steelmaking scrap are higher, notably No. 1 and No. 2 bundles. Short shoveling turnings are also higher with machine shop turnings firmer. New buying is light and former differentials between steelmaking grades have not been established. For 100 tons of machine shop turnings, Watertown arsenal, the top bid was $17.19. Because of low prices, offering of 350 tons of alloy machine shop turnings at the arsenal has been temporarily withdrawn.

New York—Scrap brokers' buying prices are unchanged throughout the list, with the market undertone stronger. Only in No. 2 bundles does there appear to be any pronounced easing, with business continuing so lifeless it is difficult to accurately appraise the market.

Buffalo—Waiting for the leading mill buyer to place delayed orders for the current month has led to further easing in the depressed scrap market here. Lower prices will not be surprising although for the moment prices are nominally unchanged. The area's second largest consumer has lifted its embargo on shipments. However, weakness is augmented by sustained influx of scrap by water with approximately 8000 tons arriving last week and still additional tonnage reported on the way.

Philadelphia—For the second consecutive week scrap prices have held virtually unchanged. This applies not only to steel grades but to cast as well. There are no indications of an upturn at this time, but clearly the downtrend has been checked, at least for the present. New buying is moderate.

Pittsburgh—Slightly stronger sentiment for scrap purchases is reported. Mill inventories are going down. Industrial scrap is not forthcoming in sufficient quantities to sustain production demands. Inquiries are circulating for open hearth grades for June delivery from companies that placed no orders for May. Scrap men feel steel mill inventories are more normal, and this thinking is reflected in renewed interest in the market.

Opinion is no great activity will be apparent in the scrap market, all other things considered, until about August.

Cast grades are moving slowly. Gray iron foundries are out looking for orders.

Cleveland — For the present, the scrap market appears to have reached a temporary bottom at least. While the market tone is weak, with buying extremely limited, prices appear to be holding at levels established a couple weeks back. No. 2 melting steel and turnings are piling up in dealers' yards but no further price declines on these grades are noted in the absence of sales. Developments over the next week or so it is thought will point the way the market will turn over the next few weeks. However, no substantial change in market conditions is anticipated until mill buying is resumed on a large scale and with the vacation season just ahead such buying is thought unlikely before late summer, even though mill stocks reportedly are shrinking.

St. Louis—Scrap trade remains dull. Dealers are of the view the downward price trend is about over, but some brokers discount this as wishful thinking based solely on

(*Please turn to Page* 156)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

June 4	$39.50
May 28	39.17
May avg.	39.17
June 1952	42.63
June 1948	40.67

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting...	39.00-40.00
No. 2 heavy melting...	34.00-35.00
No. 1 bundles	39.00-40.00
No. 2 bundles	31.00-32.00
No. 1 busheling	39.00-40.00
Machine shop turnings.	25.00-26.00
Mixed borings, turnings	25.00-26.00
Short shovel turnings..	30.00-31.00
Cast iron borings	29.00-30.00
Cut structurals	45.00-46.00
Heavy turnings	39.00-40.00
Punchings & plate scrap	*47.00-48.00*
Electric furnace bundles	*44.00-45.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	*40.00-41.00*
Heavy breakable cast..	37.00-38.00
Unstripped motor blocks	35.00-36.00
No. 1 machinery cast..	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt	*45.00-46.00*
Rails, 2-ft. and under.	50.00-51.00
Rails, 18-in. and under.	51.00-52.00
Rails, random lengths..	47.00-48.00
Railroad specialties ...	49.00-50.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting..	39.00
No. 2 heavy melting..	34.00-34.50
No. 1 bundles	39.00-40.00
No. 2 bundles	32.00-33.00
No. 1 busheling	38.00-39.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	26.00-27.00
Short shovel turnings..	26.00-27.00
Cast iron borings	26.00-27.00
Low phos.	43.00-44.00
Alloy free, short shovel turnings	30.00-31.00
Electric furnace bundles	41.00-42.00

Cast Iron Grades

No. 1 cupola	43.50-44.00
Charging box cast	42.00-43.00
Stove plate	42.00-43.00
Heavy breakable cast..	37.00-38.00
Unstripped motor blocks	27.00-28.00
Brake shoes	36.00-37.00
Clean auto cast	45.00-46.00
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	43.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R.R. Malleable	49.00-50.00
Rails, 3-ft. and under	52.00-53.00
Rails, 18-in. and under	55.00-56.00
Rails, random lengths.	48.00-49.00
Cast steel	49.00-50.00
Railroad specialties ...	50.00-51.00
Uncut tires	49.00-50.00
Angles, splice bars ..	52.00-53.00
Rails, rerolling	53.00-54.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting..	41.00-42.00
No. 2 heavy melting..	34.00-35.00
No. 1 bundles	41.00-42.00
No. 2 bundles	33.00-34.00
Machine shop turnings.	22.00-23.00
Short shovel turnings..	27.00-28.00
Cast iron borings	27.00-28.00
Low phos.	47.00-48.00
Electric furnace bundles	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting...	41.00-42.00
No. 2 heavy melting...	37.00-38.00
No. 1 bundles	41.00-42.00
No. 2 bundles	Nominal
No. 1 busheling	41.00-42.00
Machine shop turnings.	27.00-28.00
Mixed borings, turnings	32.00
Short shovel turnings..	33.00
Structurals & Plate....	45.00-46.00
Heavy turnings	39.50-40.50
Coupiers, springs, wheels	50.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	40.00
Heavy breakable cast..	43.00
Unstripped motor blocks	29.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting...	33.00-34.00
No. 2 heavy melting...	29.00-30.00
No. 2 bundles	Nominal
Machine shop turnings.	17.00-19.00
Mixed borings, short turnings	22.00-23.00
Low phos. (structural & plate)	37.00-38.00
Shovel turnings	22.50-23.50

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	22.50-23.00

DETROIT

No. 1 heavy melting	*32.00-33.00*
No. 2 heavy melting...	26.00-27.00
No. 1 bundles	36.00-37.00
No. 2 bundles	23.00-24.00
No. 1 busheling	35.50-36.50
Machine shop turnings.	14.00-15.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings..	18.00-19.00
Punchings & plate scrap	40.00-41.00

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	35.00-36.00
Stove plate	35.00-36.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Delivered consumer plant)

No. 1 heavy melting...	41.00
No. 2 heavy melting..	37.00
No. 1 bundles	41.00
No. 2 bundles	34.00
No. 1 busheling	41.00
Machine shop turnings.	22.00
Mixed borings, turnings	22.00*
Short shovel turnings..	26.00*
Cast iron borings	22.00*

Cast Iron Grades

No. 1 cupola	43.00
Charging box cast	38.00
Stove plate	*28.00**
Burnt cast	*28.00**
Heavy breakable cast..	37.00*
Unstripped motor blocks	30.00
Brake shoes	29.00*
Clean auto cast	38.00
Drop broken machinery	48.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00
Malleable	45.00
Rails, 18-in. and under	53.00
Rails, random lengths..	45.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	*37.00-38.00*
No. 2 heavy melting..	34.00-35.00
No. 1 factory bundles	*39.00-41.00*
No. 1 dealer bundles	*36.00-37.00*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*37.00-38.00*
Machine shop turnings	*18.00-20.00*
Mixed borings, turnings	*18.00-20.00*
Short shovel turnings	*20.50-21.50*
Cast iron borings	*18.00-20.00*
Cut structurals	40.00-42.00
Electric furnace bundles	*40.00-42.00*

Cast Iron Grades

No. 1 cupola	*37.00-39.00*
Stove plate	32.00-34.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	40.00-42.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	*40.00-41.00*
R.R. Malleable	39.00-41.00
Rails, 2-ft. and under	*49.00-50.00*
Rails, 18-in. and under	*51.00-52.00*
Angles, splice bars	*45.00-47.00*
Rails, rerolling	47.00-48.00

BIRMINGHAM

No. 1 heavy melting...	29.50-30.50
No. 2 heavy melting ...	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	25.00-26.00
Machine shop turnings.	20.75-21.75
Short shovel turnings..	22.75-23.75
Cast Iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	38.00-39.00
Charging box cast	30.00-31.00
Stove plate	34.00-35.00
Heavy breakable cast..	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft. and under.	45.00-46.00
Rails, random lengths.	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	*33.00-34.00*
No. 1 bundles	33.00
No. 2 bundles	30.00
Machine shop turnings.	18.00
Short shovel turnings ..	20.00

Cast Iron Grades

No. 1 cupola.....	41.00-42.00
Charging box cast	*33.00-34.00*
Heavy breakable cast	*33.00-34.00*
Unstripped motor blocks	*33.00-34.00*
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	*36.00-37.00*

Railroad Scrap

Malleable	36.00
Rails, 18-in. and under	53.00-54.00
Rails, random lengths.	39.00-40.00
Uncut tires	44.00
Angles, splice bars	*45.00-46.00*
Rails, rerolling	*45.00-47.00*

BUFFALO

No. 1 heavy melting...	40.50-41.00
No. 2 heavy melting...	38.00-38.50
No. 2 bundles	36.00-36.50
No. 1 bundles	40.50-41.00
No. 2 busheling	40.50-41.00
Machine shop turnings.	23.50-24.00
Mixed borings, turnings	27.50-28.00
Short shovel turnings..	29.50-30.50
Cast iron borings	27.50-28.00
Low phos.	44.50-45.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	38.00-38.50
No. 1 machinery	42.00-43.00

Railroad Scrap

Rails, random lengths.	45.75-46.75
Rails, 2 ft. and under.	51.75-52.75

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting...	30.00-31.00
No. 2 heavy melting...	25.00-26.00
No. 1 bundles	*33.00-34.00*
No. 2 bundles	*24.00-25.00*
Machine shop turnings.	17.00-17.50
Mixed borings, turnings	19.00-20.00
Short shovel turnings	*21.00-21.50*
No. 1 cast	*32.00-34.00*
Mixed cupola cast	*26.00-28.00*
No. 1 machinery cast	*40.00-42.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting..	33.00
No. 2 heavy melting..	29.00
No. 1 bundles	32.00
No. 2 bundles	26.00
No. 3 bundles	22.00
Machine shop turnings.	15.00
Mixed borings, turnings	15.00
Short shovel turnings..	15.00
Electric furnace, No. 1	40.00-41.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast..	36.00-38.00
Unstripped motor blocks	29.00
No. 1 wheels	38.00-40.00

Railroad Scrap

Rails, random lengths.	38.00

SAN FRANCISCO

No. 1 heavy melting....	28.00
No. 2 heavy melting....	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings.	10.00
Mixed borings, turnings	29.00
Short shovel turnings..	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast..	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft. and under.	42.00
Rails, 18-in. and under.	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars ...	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting...	28.00
No. 2 heavy melting...	20.00
No. 1 bundles	25.00
No. 2 bundles	20.00
Machine shop turnings.	10.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00-43.00

HAMILTON, ONT.

(Delivered Prices)

Heavy melt	$35.50
No. 1 bundles	35.50
No. 2 bundles	35.50
Mechanical bundles	31.50
Mixed steel scrap	31.50
Mixed borings, turnings	28.50
Rails, remelting	35.50
Rails, rerolling	38.50
Busheling	28.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short steel turnings ..	28.50

Cast Iron Grades

No. 1 machinery cast..	50.00

† F.o.b., shipping point.

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Scrap . . .

(*Continued from Page 153*)

shortening supplies. Shipments are drying up as truckers turn from hauling scrap. Mill stocks are declining samewhat but buyers are not alarmed to the extent of reordering. The small orders placed are spread through many dealers. There is no strength in prices. Quotations, always subject to dickering, vary up and down according to the size of the separate deal.

Detroit—The scrap market is virtually unchanged from a week ago. The only price change noted is on heavy melting, now quoted $32 to $33.

Cincinnati—Decline of $1 a ton on stove plate and burnt cast was the only activity in the market here last week. It appears that prices paid for scrap in June will be approximately the same as those paid in May. Volume will be moderately restricted this month, as was the case in May. There is ample supply. Demand for turnings and borings is limited. The cast grades are moving slowly and no early pickup is seen with the vacation season just ahead.

Birmingham—Little scrap of any kind is moving locally. Some melting steel continues to go to other producing centers, and prices for the most part are soft. Yards are not too anxious to sell present stocks at current quotations and not much scrap, melting or cast, is currently being received.

San Francisco—Scrap prices are firm at present but a weaker tone may develop in the next few weeks as foundries close down for vacations, normally in the first two weeks of July. Buying usually slows up just preceding the vacation period. Steel grades are unchanged following $1 per ton decline two weeks ago. No. 1 heavy melting at $28 now is $6 a ton below the former OPS ceilings.

Seattle—Scrap market conditions are unsatisfactory from the dealers' standpoint. Prices are weak, and offerings are in excess of local consumption. Inventories are high. Continued pressure is being exerted for export permits as dealers seek consuming outlets for supplies.

Cast iron scrap is plentiful and some buyers are out of the market. No. 1 cupola cast is quoted at $40 though foundry purchases as low as $35 are reported. A large scrap consumer here purchased as scrap 175 tons of ingot molds from a competing interest.

Foreign Competition Keen

Seattle—Foreign fabricators are increasingly active and are meeting with some success in bidding on equipment for public works projects in this area.

Recently Seattle purchased 67,000 feet of cable from a London, England, firm. The Tacoma subsidiary of a Swiss fabricator has been awarded four generators for the Palisades power project.

Part of the equipment for McNary dam, Columbia river, will be furnished by the Ferranti Electric Co., Lancaster, England, bidding low, $817,600, for six 56,500 kv generators. Next lowest bid, $898,081, came from a rival British firm. Four U. S. firms bid up to $1,122,000.

U. S. Engineer, Seattle, has opened rebids for ten 103,300 kva transformers, Chief Joseph dam. English Electric Equipment & Trading Co., Ltd., London, England, is again low, $1,761,317, which is $70,563 under the original bid. Second low is Elettriche di Legnano, Legnano, Italy, $1,830,000.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 149

Pittsburgh—No serious coke shortage is expected because inventories are in good shape. Producers say foundry demand is moving along at a good pace, but nothing like it was a year ago. Some oven coke is coming into the district from the East. An important factor for the future may be the current litigation to lower freight rates on by-product coke.

Chicago—Demand for coke is not shrinking because of anticipated reduction in consumption during vacation closedowns of foundries starting next month. Instead, instructions are being given suppliers to ship ahead of or after vacation periods. All coke production currently is moving to consumers. No shortage is indicated into the fall months.

SALESMAN WANTED

Steel casting firm desires salesman with background to sell carbon, low alloy and stainless castings on eastern seaboard. Firm now producing pressure castings. Has X-Ray equipment and complete facilities. State qualifications in reply. Write Box 739, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry. When you have an opportunity to offer, use the Help Wanted columns of STEEL.

Wanted:
ENGINEERS

A fast-growing steel producing company is expanding its organization. We are interested in long-term development of facilities, and to help carry out program will require young, aggressive

Civil Engineer
Project Engineer
Design Engineer
Metallurgist
Foreman, Diesel Cranes and Locomotives

Give full details of experience and salary expectation. Replies will be held in strict confidence. Box 744, STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURERS' AGENTS WANTED

by manufacturer of Lifting Magnets and Magnetic Devices — Standard and Special applications. — Write giving complete information to:

Box 733, STEEL
Penton Bldg., Cleveland 13, Ohio

EXPERIENCED STEEL MEN WANTED

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- **SERVICE METALLURGISTS**
- **CHEMICAL ANALYSTS**
- **STEEL SPARK TESTER**
- **BLOOMING-BAR MILL SCHEDULER**
- **INQUIRY & ORDER PRICE CLERK**
- **SALESMEN**—For These Territories
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  2. Chicago—Milwaukee
  3. St. Louis—Southern Illinois

Excellent opportunities with a new company specializing in electric furnace production and rolling of high quality killed carbon and alloy steels.
Apply by letter stating complete qualifications and salary expected. All communications will be held in strictest confidence. Address inquiries to:

PERSONNEL DIRECTOR
GREEN RIVER STEEL CORPORATION
OWENSBORO, KENTUCKY

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USED **AS IS** **RECONDITIONED**

STANDARD GAUGE FREIGHT CARS

Box, Steel Sheathed, 40-Ton Capacity
Box, Double Sheathed, 50-Ton Capacity
Box, Single Sheathed, 50-Ton Capacity
Flat, 50-Ton, Steel Underframe, 40'6" Long
Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
Tank, 3,000-Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All-Steel, 70-ton, Triple Hopper Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'
70-Ton Capacity, Length 60'0", All-Steel, Fishbelly Underframes

STANDARD GAUGE AIR DUMP CARS

Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton, Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

CABOOSE CARS

Eight Wheel, Cupola Type

OTHER EQUIPMENT

Jordan Spreader
Locomotive Cranes
Overhead Cranes
Railroad Track Scales

STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

300 H.P., 70-Ton, Type 0-4-4-0
NEW AND RELAYING RAIL

Send us your inquiries **WE BUY FREIGHT CARS FOR DISMANTLING** **Send us your offerings**

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6,000 Gallon
8,000 Gallon
10,000 Gallon

"ANYTHING containing IRON or STEEL"

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(3) 25 Ton HENRY & WRIGHT DIEING PRESSES 11⅞" Stroke—With Double Roll Feeds. One with Scrap Cutter.
BLISS HIGH PROD. PRESSES
#630 45 Ton and #650 75 Ton 1" Strokes With Double Roll Feed & Scrap Cutters. LATE TYPE. (Send for list of other Presses & Metal Working Mach.)
SEABOARD STEEL CO., New Haven, Conn.

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3—8" x 12" United 2-High Cold Mills with Combination Pinion Stands and Gear Sets; D. C. Motor Drives; Coilers.

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SALARIED POSITIONS $3,500 TO $35,000. WE offer the original personal employment service (established 43 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 110 Dun Bldg., Buffalo 2, N. Y.

Positions Wanted

PLANT MANAGER—15 years' experience in Plant Management, Production Control, Accounting Problems, Manufacturing Development, etc. Small manufacturing plant preferred. Age 45, married, family. Write Box 738, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER
Offers broad general administrative and extraordinary manufacturing ability. Can develop high production with economic cost. Very successful in establishing simplified procedure and personnel training. Excellent record in development of methods and co-ordination. Any product involving metal working, machining and assembly. Write Box 741, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER or MULTI-PLANT CO-ORDINATOR. Successful record of accomplishment in organization and management functions. COST reduction through installation and control of tooling-methods-quality-PRODUCTION PLANNING-MATERIAL-budgets and expense analysis-JOB evaluation-labor relations-and supervisory training. M.I.T. graduate with 20 years' practical experience in sheet metal and metal turning fabrication. Write Box 742, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOR CLASSIFIED RATES
And Further Information write
STEEL, Penton Bldg., Cleveland 13, O

WANTED

COLD SAW TO CUT UP TO 20" BEAM. PREFER LATE MODEL MARVEL OR EQUIVALENT. ALSO CAN USE GOOD ROTARY SAW OR COLUMN FACER.

B. E. McKenzie
Glazer Steel Corp.
Knoxville, Tennessee
Telephone, 4-8601

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10 ton Bridge Crane span 65 to 75 feet with two (2) 5 ton trolleys cab operated. Current 3 phase 60 cycle 440 volts lift 35'-0 minimum. Give full particulars.

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SHEET GALVANIZING

MACHINERY

New or used—Complete or parcel. Equipment suitable for galvanizing steel 30 Gauge up to 24 Gauge sheets, 24" to 36" wide by 8' to 12' length.

Quote for complete equipment or each machine separately giving full specifications and particulars.

Address Box 745, STEEL

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RAILS **NEW and RELAYING**

Your exact trackage needs filled "Faster From Foster" Track Tools & Accessories are properly matched and fabricated to meet all requirements and shipped from a reliable source.

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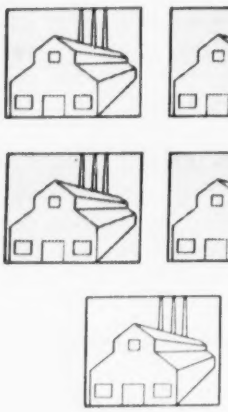
All Lengths, Sections, all standard makes your job requires. Also Rent Pile Hammers, Pile Extractors.

TRACK ACCESSORIES • PIPE • WIRE ROPE

L. B. FOSTER CO.
Pittsburgh 30, Pa. New York 7, N.Y.
Chicago 4, Ill. Houston 2, Tex.

4 out of 5



SINCE 1946, five major press plants have been built for the automotive industry to meet the increased demand for passenger cars and trucks.

Commercial Contracting Corporation was selected to install all machinery and equipment in four of these five plants.

Currently, CCC crews are beginning to place the first shipments of more than 1,000 pieces of equipment to be housed in the sixth such huge press plant constructed in the United States since the War's end.

Erecting heavy presses and other machinery is an important part of our business.

Other CCC services, provided individually or under one PACKAGE contract, include: General Construction, Building Alterations, Demolition, Foundations, Machinery Moving, Crane and Conveyor Installing, and Steel Fabricating.

COMMERCIAL CONTRACTING CORPORATION
GENERAL CONTRACTORS
12160 Cloverdale • Detroit 4

Cotton Pickers Modernize

Agriculture Secretary Ezra Benson reports that cotton harvesting machinery is coming into its own. Whereas in 1940 there were no mechanical pickers or strippers, Mr. Benson estimates that cotton growers now are using over 12,000 pickers and 20,000 strippers.

The average hand-picker requires about 100 hours to harvest a bale of cotton, he says, while a mechanical picker needs about one hour.

Heavy Investment in Research

Scientific apparatus producers are leading the way in proportionate amounts spent for research and development in American industry. That's the report of Kenneth Andersen, executive vice president, Scientific Apparatus Makers Association.

Speaking before SAMA's annual business meeting in White Sulphur Springs, W. Va., Mr. Andersen said the apparatus industry's investment in research amounted to a sizable proportion of the nation's $1,959,100,000 total expenditures.

Produces Antenna Rotator

LaPointe Electronics, Rockville, Conn., started production of a new automatic TV antenna rotator. A control unit at the receiver electronically turns the roof antenna to a point where it picks up maximum signal from a TV station.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3450 tons, maintenance hangar, Limestone, Me., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Albert A. Lutz Co., New York, contractor.

3400 tons, Lockheed aircraft plant, Burbank, Calif., to National Steel & Shipbuilding Corp., Los Angeles; McNeil Construction Co., general contractor.

2160 tons, maintenance hangar, Bunker Hill Naval Air Station, Peru, Ind., for Ninth Naval District, to American Bridge Division, U. S. Steel Corp., Pittsburgh.

1855 tons, state bridges, New York thruway, Orange and Ulster counties, New York, to Groisser & Shlager Iron Works, Somerville, Mass., through Westcott Construction Co., Providence, R. I., and John Arborio Co., Poughkeepsie, N. Y., joint contractors.

100 tons, elementary schools, Watertown and Westwood, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Park Construction Co., Boston, general contractor.

100 tons, several local school buildings, to Standard Steel Fabricating Co. Inc., Seattle.

100 tons, including miscellaneous, Army warehouse, Ladd Field, Alaska, to Isaacson Iron Works, Seattle; S. S. Mullen Inc., Seattle, general contractor.

STRUCTURAL STEEL PENDING

8515 tons, bridges, Ohio Turnpike; bids in direct, fabricated and delivered, Ohio Turnpike Commission, Columbus, O.

3600 tons, hangar for U. S. Engineers, Limestone, Me., Alfred Lutz, New York, low on general contract.

3000 tons, The Dalles, Oreg., powerhouse; Winston Bros. and Associates, low to U. S. Engineer, Portland, Oreg.

2800 tons, also 350 tons roofing, ten multipurpose nose docks, Fairchild Air field, Spokane, Wash.; redesign bids to U. S. Engineer, Seattle, about June 18.

2100 tons, galvanized transmission towers; bids in to Bonneville Power Administration, Portland, Oreg.

1350 tons, power plant, Possum Point, Va., bids being asked by Stone & Webster, Boston.

1,100 tons, state bridge, Buffalo, bids June 25.

750 tons, hangar, Reese air field base, Lubbock, Tex.; Corps of Engineers, Albuquerque, N. Mex.

450 tons, Gould student center, New York University, University Heights, N. Y., bids closed June 2.

265 tons, steel frame office building, Tacoma, Wash.; James Barnes Construction Co., Tacoma, low $559,688 to United Insurance Co., Seattle.

250 tons, facilities building, Navy, Trenton, N. J., bids June 23.

225 tons, state highway bridge, Rumford, Me., bids in.

100 tons, pedestrian overpass, Sherborn and Dartmouth streets over James J. Storrow Drive, Boston; bids in, Metropolitan District Commission.

100 tons, testing facilities building, Boeing Airplane Co., Seattle; bids in June 1.

100 tons plus, high school building, Ketchikan, Alaska; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

210 tons, Hillsboro high school, Nashville, Tenn., to Wilson-Weesner-Wilkinson Co.; Nashville; W. F. Holt & Sons Construction Co., Nashville, general contractor; 85 tons structural steel to Englert Engineering Co.

200 tons, Fox Island highway bridge and miscellaneous, to Bethlehem Pacific Coast Steel Corp., Seattle.

100 tons, elementary schools, Watertown and Westwood, Mass., to U. S. Steel Supply Division, U. S. Steel Corp., Cambridge, Mass.; Park Construction Co., Boston, general contractor.

REINFORCING BARS PENDING

34,000 tons, The Dalles, Oreg., Columbia river powerhouse and dam; Winston Bros. & Co., Minneapolis, and associates low to U. S. Engineer, Portland.

458 tons, Garden State Parkway, contract 43, section 7, Monmouth county, N. J., bids June 18.

330 tons, Garden State Parkway, contract 71, section 10, Ocean and Burlington counties, N. J., bids June 18.

250 tons, Garden State Parkway, contract 72, section 10, Atlantic county, N. J., bids June 18.

160 tons, bridges, West Virginia Turnpike, Fayette county.

PLATES . . .

PLATES PENDING

250 tons, elevated storage tank, also prestressed ground tank, Great Falls, Mont., air base; bids to U. S. Engineer, Seattle, June 5.

PIPE . . .

CAST IRON PIPE PENDING

350 tons, 10,941 ft, mostly 12 in., and accessories; bids to Yerda Earley, clerk, Enumclaw, Wash., June 9.

300 tons, District No. 20, Seattle; general bids in.

100 tons, 7500 ft 6 and 4 in. and accessories; bids to District No. 79, Seattle, June 16.

Unsurpassed Synthetic RUBBER COMPONENT PARTS

Users of Acadia Synthetic Rubber component parts in hundreds of industries have found them unsurpassed. No matter what function synthetic rubber must perform, depend on Acadia parts. They best meet exacting specifications and operating conditions such as moisture, oil, heat, wear and age resistance. Molded, extruded, die-cut to close limits—compounded to meet specific conditions. Acadia engineers will gladly cooperate.

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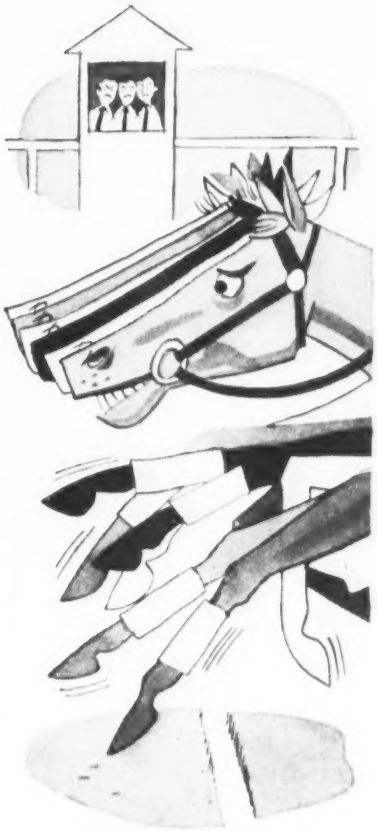
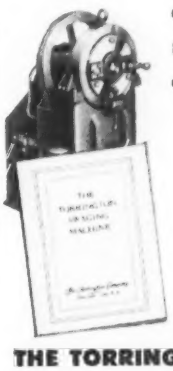


need a better finish?

Torrington Swaging Machines—delivering 4000 hammer blows a minute—work out surface imperfections quickly...produce a finish far superior to that obtained by other reduction methods. Swaging improves the quality of the material, too, and utilizes every ounce of stock.



"The Torrington Swaging Machine" describes all the advantages of swaging and gives full details on all Torrington machines. A copy is yours for the asking.

THE TORRINGTON COMPANY
Swager Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

PANGBORN
BLAST CLEANING
GIVES YOU FASTER, CHEAPER MAINTENANCE

Either a Portable Unit to Clean Structures . . .

Pangborn Blast Cleaning Machine—Cleans tanks, bridges, buildings, and other structures quickly and economically. Ideal for maintenance and other jobs, such as removal of dirt, scale, rust, etc. preparatory to painting. Six sizes, stationary or portable, from . . . **$187** and up.

Or a Compact Cabinet for Small Pieces

Pangborn Blast Cabinet—Saves time and money in cleaning small metal parts . . . removing rust, scale, grime, old paint, etc. Produces smooth, clean surfaces on pieces up to 60″ x 35″ in size. Models from . . . **$319** and up.

Pangborn Unit Dust Collectors—Trap dust at the source. Minimize maintenance, allow reclamation of valuable material . . . **$286** and up.

Pangborn Hydro-Finish Cabinets—Remove directional grinding lines, hold tolerances to .0001″. Reduce further finishing of tools, molds, dies . . . **$1410** and up.

Write for details on these machines to: PANGBORN CORPORATION, 1600 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment.

Pangborn

BLAST CLEANS CHEAPER

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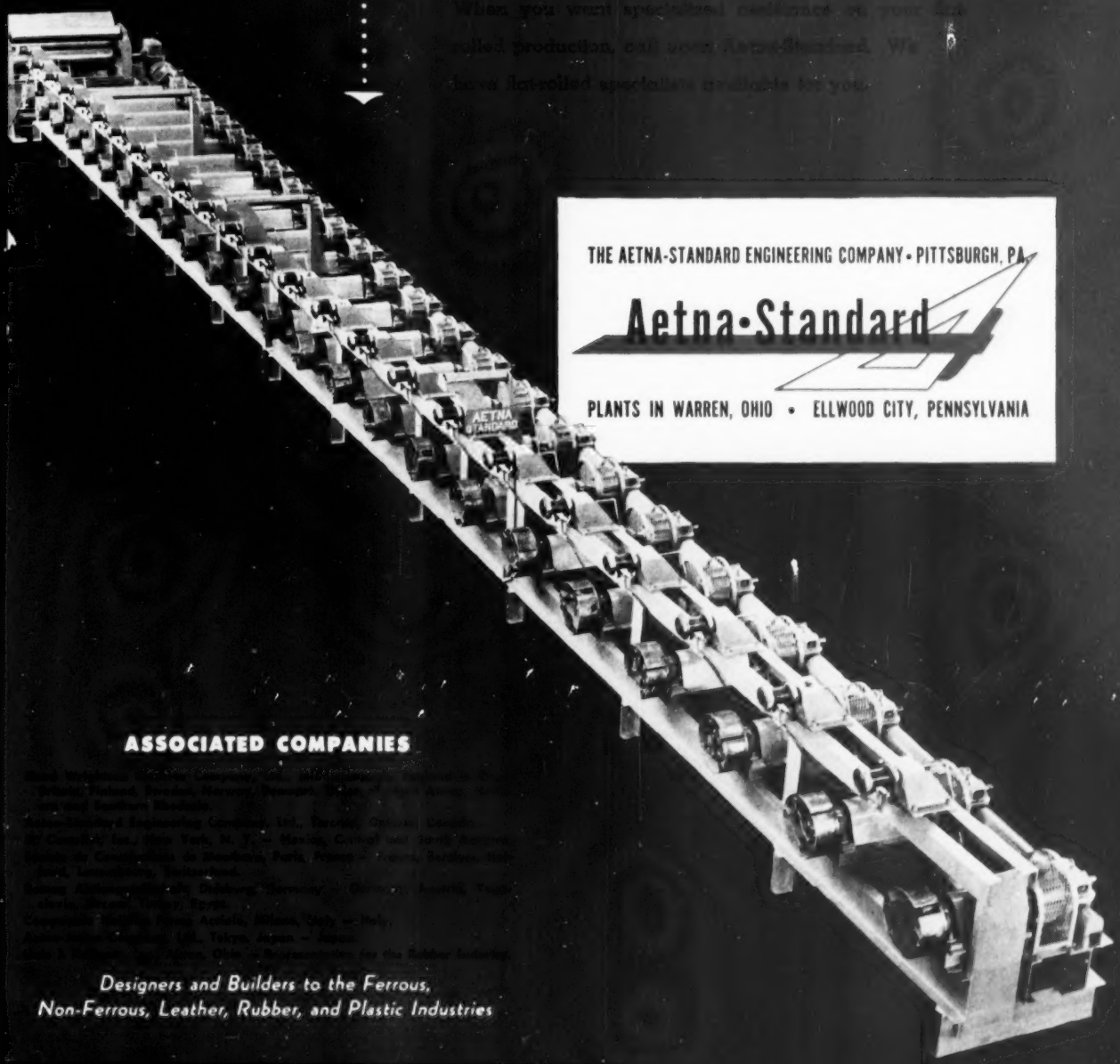


THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Aetna-Standard

PLANTS IN WARREN, OHIO • ELLWOOD CITY, PENNSYLVANIA

ASSOCIATED COMPANIES

Designers and Builders to the Ferrous, Non-Ferrous, Leather, Rubber, and Plastic Industries

New trolleys on TIMKEN® bearings carry 15 tons of ore from hold to hopper in 45 seconds

A 15-TON load of ore is carried from vessel's hold to receiving hopper in 45 seconds with this trolley on a new Dravo Corporation unloader, one of two at Baltimore & Ohio Railroad Company's new import ore dock at Baltimore, Maryland. Each unloader operates with a bucket hoisting speed of 250 feet per minute and a trolley travel geared balanced speed of 1000 feet per minute.

To carry the heavy loads and to keep ore moving smoothly and quickly, the trolley's axle drive gear support and axle support are mounted on Timken® tapered roller bearings.

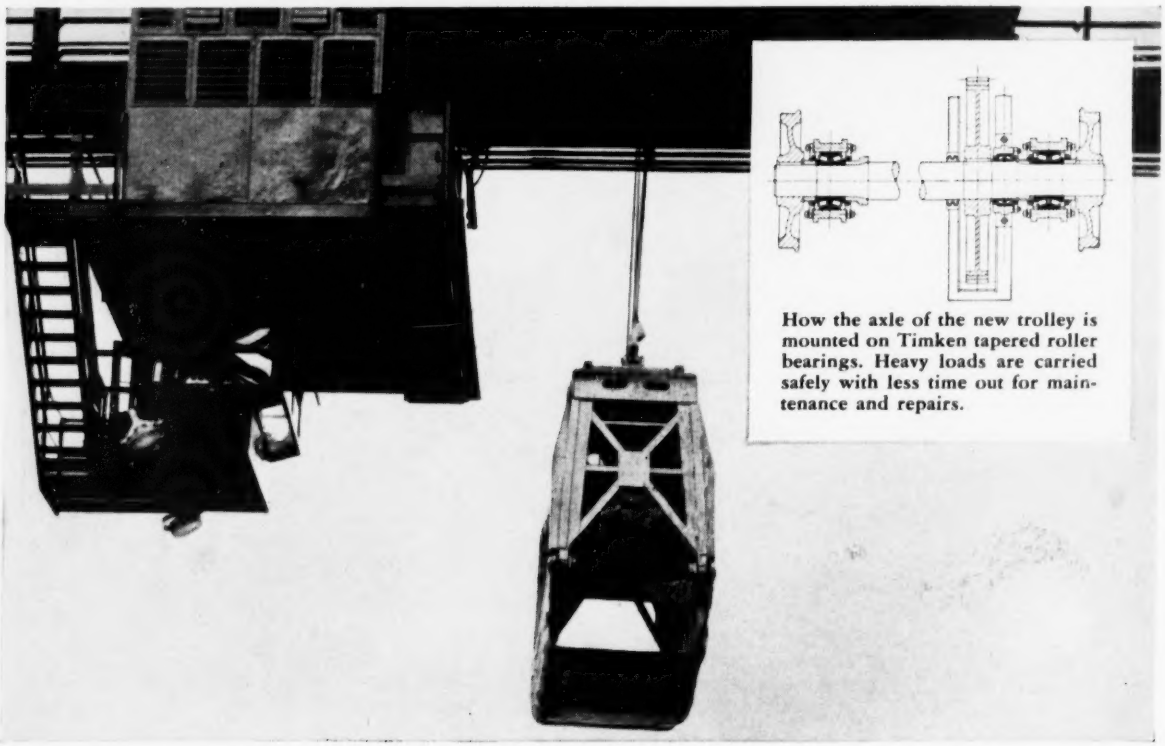
Due to line contact between rollers and races, Timken bearings provide extra load-carrying capacity. Their tapered construction permits them to take all loads—radial, thrust and combination—with ease. Shafts are held in perfect alignment. Gears mesh smoothly, accurately. Gear life is lengthened.

Friction is practically eliminated with Timken bearings due to incredibly smooth surfaces and true rolling motion. Even under the heavy trolley and bucket loads, Timken bearings turn freely and with minimum wear.

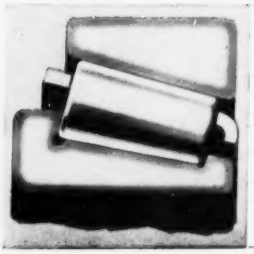
In addition, Timken bearings hold shafts and housings concentric, making closures more effective against dust, dirt and moisture. Lubricant stays in. Lubricant and maintenance costs are cut.

No other bearing can offer you *all* the advantages of Timken bearings. Specify them. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How the axle of the new trolley is mounted on Timken tapered roller bearings. Heavy loads are carried safely with less time out for maintenance and repairs.



HARD ON THE OUTSIDE, TOUGH ON THE INSIDE

Rollers and races of Timken bearings are case-carburized to give a hard, wear-resisting surface and a tough, shock-resisting core. Result: longer bearing life.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION